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ABSTRACT

Key issues pertinent to federal support of nursing education and training are considered. Policy options for nurse training include: support for programs to increase aggregate supply, support for programs to improve geographic distribution of nurses, support for programs to increase the availability of nurses with advanced training, and support for programs to expand minority enrollment. In addition to analyzing trends in the supply and demand for registered nurses, the impact of major health system changes, such as health insurance, on supply and demand is examined. The current status of programs authorized by the Nurse Training Act of 1975 and other federal programs that support nursing education and training are described. A summary assessment of the models developed to estimate the future demand for and/or supply of RNs is included. (SW)

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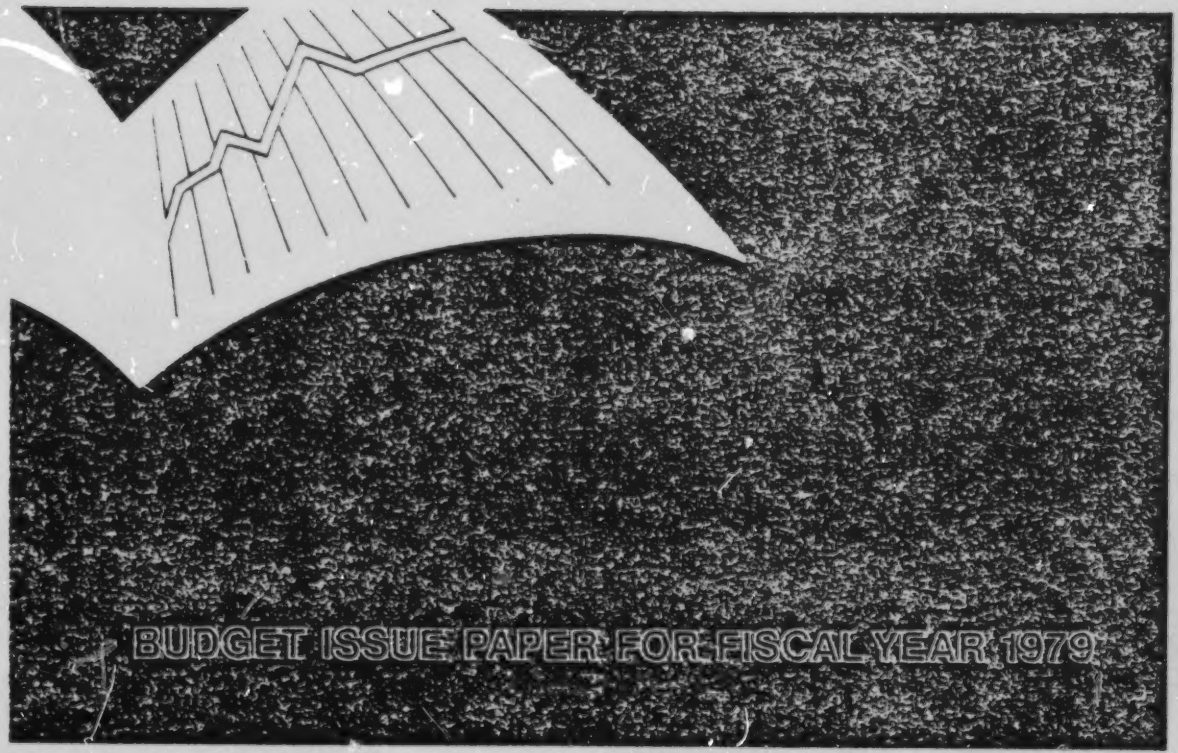
Nursing Education and Training: Alternative Federal Approaches

May 1978



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CONGRESSIONAL BUDGET OFFICE
CONGRESS OF THE UNITED STATES

NURSING EDUCATION AND TRAINING: ALTERNATIVE FEDERAL APPROACHES

The Congress of the United States

Congressional Budget Office

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SUMMARY

The Nurse Training Act of 1975 (NTA), which authorizes federal support for nursing students and institutions, expires at the end of fiscal year 1978. Thus, during 1978, the Congress faces both legislative and funding decisions regarding the future federal role in nursing education and training.

Currently, the federal government provides $125 million in direct support of nursing training under NTA programs and approximately $13 million more in other programs. Of NTA funds, $78.5 million goes to nursing institutions, accounting for about 8 percent of their costs. The remainder, $47 million, goes to student assistance programs that provide roughly 20 percent of tuition payments for nursing students. This federal support for nursing training is intended to:

- ensure an adequate supply of nurses;
- improve the geographic distribution of nurses;
- increase the availability of nurses with advanced training; and
- expand minority group enrollment in nursing schools.

Assessments of the adequacy of the supply of nurses depend on somewhat subjective estimates of "need" and uncertain predictions of the number of nurses in training and of the proportion of trained nurses that practice nursing. Nevertheless, the current aggregate supply of nurses appears adequate and, if current trends continue, supply should exceed or roughly equal demand in the future. But, current trends may not continue and, if changes in demand occur, they will alter slightly the adequacy of the supply of nurses. Overall demand for nurses may decline slightly if health maintenance organizations (HMOs) increase in patient volume. Demand for nurses, particularly in ambulatory care settings, may increase if a comprehensive national health insurance program is implemented or if the roles of nurses are expanded.

The geographic distribution of nurses remains uneven. Some regions and types of communities have no problem obtaining nurses while others (particularly southern states, rural communities, and inner-city neighborhoods) experience difficulty in acquiring nurses. The impact of possible nurse shortages on the quality of health care is uncertain, but in shortage areas, nurses with less training are more heavily utilized and many jobs for nurses with more advanced training remain unfilled.

The adequacy of the supply of graduate degree nurses is very uncertain, but most subjective assessments report that fewer nurses with advanced degrees are available than are desired. There is little documentation that more training results in improved patient care but highly trained nurses may be more productive and able to assume greater responsibilities. For instance, nurse practitioners, who can perform tasks traditionally provided only by physicians, are often additional sources of basic medical care, particularly in underserved areas.

Increases in the enrollment of minority group members in nursing schools are desired both to expand equality of educational opportunity and because minority nurses appear more willing to serve otherwise underserved populations. Minority enrollment in nursing schools expanded rapidly between 1965 and 1972, but since 1972, it appears to have stabilized at about 10 percent of overall enrollment in basic nursing programs.

Policy Options for Nurse Training

The future character and size of the federal role in nursing training depends on which objectives are to be furthered by federal activities. Current federal programs differ with respect to which objectives they affect and new or modified programs could be implemented in order to increase goal achievement.

Programs to Increase Aggregate Supply. If the Congress wishes to increase the aggregate supply of nurses, three current programs should be continued and given more emphasis: construction grants to increase institutional capacity; capitation grants (institutional aid awarded according to a formula based on the number of students enrolled in a nursing school) that directly support program expansion; and special project grants

PREFACE

In 1978, the Congress must decide whether to extend, alter, or discontinue the Nurse Training Act of 1975. This paper, prepared at the request of the Senate Budget Committee, focuses on key issues pertinent to federal support of nursing education and training. Among these issues are the present and future adequacy of the supply of qualified registered nurses, their geographic location, and the representation of minorities in nursing. In keeping with CBO's mandate to provide nonpartisan and objective analysis, the report offers no recommendations.

Cheryl Smith of CBO's Human Resources and Community Development Division prepared the paper under the supervision of Robert D. Reischauer and David S. Mundel. The author wishes to acknowledge the helpful comments and suggestions of Rick Brandon, Sinclair Coleman, Malcolm Curtis, Barry Kinsey, Martin Levine, Joe Manes, Michael Millman, John Nelson, Thyra Riley, and the research assistance of Debbie Haas. Special thanks go to Toni Wright for her patience and skill in typing the many drafts of this paper. The manuscript was edited by Patricia H. Johnston.

Alice M. Rivlin
Director

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areas more attractive to nurses; encourage physicians in underserved areas to hire more nurses; or develop new facilities where needed to create job opportunities for nurses.

Programs to Increase the Availability of Nurses with Advanced Training. The number of nursing programs that prepare nurses for advanced clinical practice, supervisory, or teaching roles and their enrollments have increased in response to the availability of federal aid. The number of nurse-practitioner programs has grown 58 percent in the last four years and annual graduations from these and master's programs in nursing are at their highest level ever. Operating support is available in the form of grants specifically for master's and doctoral training programs for nurses and for nurse-practitioner programs, as well as through special project awards. Over 30 percent of students in these programs receive financial assistance through federal traineeships. To increase further the supply of nurses with graduate degrees or expanded role training, current programs could be modified by providing schools with general institutional assistance based either on the number of students enrolled in or graduating from graduate programs.

Programs to Expand Minority Enrollment. Programs that encourage schools to seek out minority applicants and provide them access to nursing opportunities have been successful. They include special project grants and student financial assistance, particularly NTA loans and scholarships. Minority enrollments in basic RN programs rose nearly fourfold from 1965 to 1972 to about 10 percent of total nursing school enrollments. Recent data, however, suggest a stabilizing trend. To increase minority group representation further, methods could include requiring schools to set and work toward goals for minority enrollment in order to receive capitation or other federal funds, simply expanding available aid for student assistance and for recruitment and retention purposes, or both.

Future Federal Funding Strategies

Different programmatic options can be combined into various funding strategies depending on policy goals. The Administration's funding recommendation for federal aid to nursing programs in fiscal year 1979 represents one approach. It assumes that many national purposes in nursing have been achieved and that federal efforts are necessary only to improve geographic

for innovative projects in nursing that provide a source of funds for improvements in educational programs. 1/ In fiscal year 1978, these activities will receive $48.5 million in support.

Programs to Improve Geographic Distribution. Current federal nursing programs appear to have little, if any, effect on the uneven geographic distribution of nurses. Of these programs, support of nurse-practitioner programs has had the most significant results. Relatively few special project grants have been oriented toward altering distributional imbalances and the end result of these projects is unknown. Few nurses have taken advantage of the provisions of nursing student loan and scholarship programs that exempt a nurse from repaying educational debts if she agrees to practice in a designated shortage area. There are several reasons why so few have used this provision: nursing loans may also be cancelled for service in any nonprofit institution; students do not have large debts; or nurses are simply unwilling to locate in certain areas.

Continuing geographic inequalities could be improved by concentrating federal support on developing nursing resources in underserved areas. This can be done by targeting funds to nursing schools in or near these areas, further expanding nurse-practitioner programs, restricting loan forgiveness options to service in shortage areas, and greatly expanding the small number of National Health Service Corps scholarships currently available to nurses. 2/ Measures could also be undertaken to make working conditions in health care facilities in underserved

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1/ Special project grants may support the development of new training programs, minority recruitment activities, continuing education programs, and retraining opportunities for inactive nurses. Also eligible are activities that improve the geographic distribution of nurses, upgrade the skills of paraprofessionals, and provide inservice training for nurse aides and orderlies.

2/ The National Health Service Corps scholarship program provides generous scholarships to health professions students in return for a minimum of two years of service in a medically underserved community (upon application by that community).

SUMMARY TABLE. FISCAL YEAR 1979 BUDGET AUTHORITY FOR ALTERNATIVE FEDERAL NURSING EDUCATION AND TRAINING STRATEGIES a/: IN MILLIONS OF DOLLARS

	Current Policy	Administration's Proposal	Modified Current Policy
Institutional Assistance			
Construction	0 b/	0	1.0 - Only for interest subsidies and loan guarantees
Financial Distress	0	0	0
Capitation	32.4	0	0
Special Projects	15.9	7.5 - New funds are only for projects which improve the geographic distribution of or minority representation among RNs	50.0 - Eligible projects limited to those that improve the distribution of RNs by specialty or geographic area or focus on minority recruitment and retention
Nurse Practitioners	13.8	13.0	14.0
Advanced Nursing Training	12.8	0	16.0 - Includes a bonus of $1,500 for each additional graduate over a base number of annual graduates from a master's or doctoral or nurse practitioner program
Nursing Research	5.3	0	0
Student Assistance			
Loan Repayment	25.4	0	2.0 - Only for repayment of loans for nurses who serve in shortage areas
Scholarships	9.5	0	14.0 - Only for exceptionally needy students
Traineeships	13.8	0	14.0
Fellowships	1.1	0	0
Total	129.9	20.5	111.0

a/ Fiscal year 1979 current policy estimates are dollars needed to maintain current levels of service, calculated using fiscal year 1978 appropriations times 1.06 inflation factor. Current policy estimates for capitation were figured on a per student basis.

b/ In this instance, current policy for construction grants is estimated to be $0 because no awards have been made for this purpose since fiscal year 1975, except for one award to a consortium of nursing schools.

imbalances and minority representation. In fiscal year 1979, $20.5 million would be targeted to nurse-practitioner programs and special projects. All other programs would be terminated. As a result, a substantial decrease in the aggregate supply of RNs and a large drop in the supply of RNs with graduate training might be expected. In addition, nursing students would be forced to assume a greater share of their educational costs by paying higher tuition charges. The greater financial burden on students along with the elimination of student aid available only to nursing students would increase the demand for assistance from other federal student aid programs. For the most part, these programs are likely to be able to accommodate the additional students.

An alternative approach assumes that greater achievement in all dimensions of nursing education and training warrants a higher level of federal support than that proposed by the Administration. Incremental changes in some current programs would be made and other programs (construction grants, financial distress grants, capitation grants, research grants, nursing student loans and fellowships) would be terminated. These changes would be intended to create stronger incentives for nursing school and student actions that improve distributional imbalances and minority recruitment and retention, and accelerate the training of graduate nurses and nurse practitioners.

Major incremental changes from current policy would involve replacing capitation grants with special project awards, thus minimizing the possibility of creating financial hardships for nursing schools caused by loss of capitation grants. At the same time, in order to retain current levels of federal support, an incentive would exist for schools more actively to develop projects to address national problems in nursing. New incentives through "bonus" awards for advanced nursing training and nurse-practitioner programs would accelerate the supply of these types of nurses. Lastly, expanded scholarships for exceptionally needy students would not only complement minority recruitment and retention activities, but also reduce financial hardships for students unable to secure adequate aid from other federal student assistance programs.

CHAPTER I. INTRODUCTION

Pressures for continued or increased federal assistance to nursing schools and students stem from two sources: a perceived scarcity of specific types of nurses who can assume teaching, supervisory, administrative, or specialized clinical practice duties and the difficulty certain geographic areas and types of facilities appear to have in attracting nurses. The need for continued federal aid to nursing schools in order to increase or redistribute the supply of nurses, however, is now questioned for several reasons. First, a dramatic increase in the supply of nurses in the last decade has led some observers to question whether further increases are necessary. Second, many of those concerned with controlling health care costs believe that the growing supply of health manpower, including nurses, is directly related to burgeoning federal expenditures for health care and, thus, federal policies that try to expand health manpower compete with cost control efforts. Finally, many believe that improvements in environmental conditions and changes in personal lifestyles rather than further expansion of the health care sector may be more effective approaches to improved health status.

Legislative and budgetary decisions involving nursing education and training confront the Congress in 1978. The Nurse Training Act of 1975 expires at the end of fiscal year 1978. The objectives of this act are to increase the quantity of registered nurses (overall and from minority backgrounds), to encourage practice in underserved areas, and to improve the quality of nursing education and practice. Major questions facing the Congress include: should the act be reauthorized in its present form? modified? or allowed to expire? If the act is continued, at what levels should its activities be funded?

The Administration believes that many of the objectives of the 1975 Act have been met and thus it has proposed major reductions in federal assistance to nursing schools and students in fiscal year 1979. Others have proposed that the act be reauthorized and its funding increased. This paper provides information designed to assist the Congress in formulating policies on this issue. Specifically, the paper covers the following topics:

- The characteristics and trends in the supply of and demand for registered nurses and their educational preparation, minority representation, and geographic distribution (Chapter II);

- The impact of potential health system changes on the future supply of and demand for registered nurses (Chapter III);

- Major federal programs that provide assistance to nursing schools and students, their budget levels, and effects (Chapter IV);

- Alternative federal approaches to nursing education and training (including the Administration's recommendations), their effects, and impact on the fiscal year 1979 budget and beyond (Chapter V).

CHAPTER II. THE SUPPLY OF AND DEMAND FOR REGISTERED NURSES: TRENDS AND CHARACTERISTICS

The changing supply of and demand for registered nurses suggest that national needs may also be changing. 1/ Large increases in the supply of registered, or professional, nurses (RNs) have occurred in recent years and the supply is expected to be adequate to meet future aggregate demand for nurses. Despite vanishing quantitative shortages, some believe a qualitative shortage lingers--too few RNs with adequate academic preparation. Little concrete evidence exists, however, on the extent to which this is a problem. With respect to minority representation in nursing, data do suggest appreciable increases in RNs from minority backgrounds, although this trend may be changing. The most apparent extant problem is a persistent distributional imbalance in the geographic availability of RNs, resulting in waiting lists for nursing jobs in some areas while numerous vacancies exist in others. A review of the status and trends in each of these dimensions is essential to an understanding of the issues surrounding the reauthorization of the Nurse Training Act of 1975.

THE SUPPLY OF AND DEMAND FOR REGISTERED NURSES IS LIKELY TO BE IN BALANCE IF CURRENT TRENDS CONTINUE

Overall, evidence suggests that there is a reasonable balance between the aggregate demand for RNs and the overall supply. On the supply side, there are now about 1,373,000 licensed registered nurses. Many of these nurses, however,

1/ The term "nurse" in this paper means registered nurse unless otherwise noted, although practical nurses, nurse aides, or orderlies may sometimes substitute for rather than complement registered nurses in the provision of nursing care. Of these types of nursing personnel, registered nurses generally have the most academic preparation and training and the greatest nursing responsibilities. Generally, practical nurses follow in training and responsibilities and then nurse aides and orderlies.

are inactive or work part-time. 2/ Hence, the full-time equivalent supply of RNs available for employment is about 822,000, or 383 RNs per 100,000 persons. This ratio may increase to as much as 557 RNs per 100,000 persons by 1990, or 45 percent more than today. In contrast, the per capita supply of practical nurses (PNs), who are sometimes close substitutes for RNs, is projected to grow at a slower rate, increasing as much as 31 percent, from 200 to 261 PNs per 100,000 persons by 1990 (see Table 1).

On the demand side, there is little evidence that the current supply of RNs available for employment significantly exceeds demand. The unemployment rate of RNs is low compared to other workers--2.6 percent of all RNs were looking for a job in 1976 compared to 4.0 percent of all female professional and technical workers and 7.7 percent of all civilian workers. Moreover, a recent survey of newly licensed RN graduates in 33 states found that they had little difficulty finding jobs. 3/

While employment figures suggest no surplus of RNs, they give few clues as to whether aggregate shortages exist. Available indicators of "need," or the number of RNs needed to provide safe and effective nursing care, however, show no overall

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2/ The term "supply" in this paper refers only to registered or practical nurses who are employed or available for employment. It excludes all nurses who are inactive; that is, not employed or looking for work. Currently, this group includes about 412,000 RNs, or 3 out of every 10 nurses. Of all employed RNs, about 29 percent work part-time.

The working patterns of nurses are affected strongly by marital status and children, although this influence appears to be diminishing. Proportionately fewer nurses are inactive or part-time workers today than in the past.

3/ Walter L. Johnson, "Supply and Current Demand for Nurses in Light of a Survey of Newly Licensed Nurses," in Michael Millman, ed., Nursing Personnel and the Changing Health Care System (Ballinger, 1978).

TABLE 1. ACTUAL AND PROJECTED SUPPLY OF REGISTERED NURSES AND PRACTICAL NURSES AVAILABLE FOR EMPLOYMENT, SELECTED CALENDAR YEARS, 1966-1990 a/

Registered Nurses

	Total a/	Full-Time Equivalent (FTE) b/	FTE Per 100,000 Population
1966	621,000	544,000	279
1976	961,000	822,000	381-383
1980	1,088,000-1,168.000	931,000-1,022,000	416-457
1990	1,459,000-1,541,000	1,248,000-1,371,000	507-557

Practical Nurses

	Total c/	Full-Time Equivalent (FTE) d/	FTE Per 100,000 Population
1967	270,000	238,000	120
1976	489,000	430,000	200
1980	564,000-566,000	496,000-509,000	222-228
1990	647,000-697,000	569-000-641,000	231-261

SOURCES: American Nurses' Association, Facts About Nursing 76-77 (Kansas City, Mo: American Nurses' Association, 1977); Tom Bergan and Gary Hirsch, A National Model of Supply, Demand and Distribution, Final Report (Cambridge, Mass.: Pugh-Roberts Associates, Inc., 1977); U.S. Department of Commerce, Bureau of the Census, Current Population Reports, series P-25, nos. 632 and 636; U.S. Department of Commerce, Bureau of Economic Analysis, Area Economic Projections 1990 (1976); and HEW, Health Resources Administration, Bureau of Health Manpower, Division of Nursing, First Report to Congress (February 1, 1977).

a/ The low RN supply projections presented in the table are estimates from a model, developed by Pugh-Roberts Associates, Inc., of factors that affect the supply and demand for RNs assuming current trends continue. (See the Appendix for a

(continued)

TABLE 1. (footnotes continued)

brief assessment of this model.) The Pugh-Roberts estimates were lower--7 percent in 1980 and 1 percent in 1990--but tended to converge with the lowest RN supply estimate of several developed by HEW. HEW used traditional forecasting techniques of analyzing historical trends in admissions and graduations from nursing schools and making predictions of future needs. The low RN projections by HEW assume that nursing school admissions remain at the same level from 1975 through 1978 and then decline by 0.5 percent thereafter. An increase in annual net attrition rates (which accounts for entry into and withdrawal from the labor force) from 2.1 to 4.0 percent by 1990 is further assumed. On the other hand, the high RN projections, presented in this table, assume that nursing school admissions increase at the current rate, 1.5 percent annually, through 1978 and stabilize at that level through 1984. A 0.5 percent annual decline in admissions is assumed thereafter. The annual net attrition rate is assumed to increase from 2.1 to 3.5 percent by 1990. The high RN projections predict a more rapid transfer in diploma program admissions to associate degree programs, which are one year shorter in length. Thus, the higher rate of increase in admissions and the shift to a shorter training program tend to account for the higher estimates.

b/ Projections of the total number of RNs were converted into full-time equivalents by assuming that the proportion of part-time registered nurses could remain stable at 29 percent --its current level--or decline to as much as 22 percent by 1990. In both cases, one part-time RN was assumed to be equivalent to one-half a full-time RN.

c/ The supply projections for practical nurses were developed by HEW and predict that the ratio of practical nursing graduations to all high school graduations will equal 1.45 percent, as in the past. The low projections assume a continuation of the current 5.3 annual net attrition rate; high projections assume a slightly lower annual rate of 4 percent by 1990.

d/ Projections of the total number of practical nurses were converted into full-time equivalents by assuming that the proportion of part-time practical nurses could remain stable at 24 percent--its current level or decline to as much as 16 percent by 1990. Again, in both cases, one part-time practical nurse is assumed to be equivalent to one-half a full-time practical nurse.

shortage of RNs. 4/ In 1963, the Surgeon General's Consultant Group on Nursing (SGCGN) recommended that 850,000 employed RNs would be needed by 1970. 5/ When converted into full-time equivalents, this goal represents about 353 RNs per 100,000 persons, which was surpassed in 1976. A changing population mix, however, could create a future need for nurses greater than that in 1970. In 1974, the Division of Nursing in the Department of Health, Education, and Welfare (HEW) estimated a need for 1,100,000 employed RNs by 1980, or roughly 421 RNs per 100,000 persons, in full-time equivalents. Estimates of the available supply of RNs in 1980 indicate that this goal will be met (see Table 1). Another indicator of need is hours of nursing care per hospital patient day. In 1950, nursing professionals recommended that 3.5 nursing hours be provided per patient day, with at least 2.4 hours provided by professional nurses. 6/ One study of 1970 staffing patterns in short-term general hospitals indicated that nursing hours per adjusted patient day averaged 6.3 hours. Of these, 2.8 hours were provided by registered nurses. 7/

4/ These indicators are esentially value judgments. They are not necessarily the "right" measures and are independent of the number of nurses that employers will actually hire. Moreover, the American Nurses' Association recently took the position that no one numerical concept, specific formula, or ratio can be applied generally in inpatient health care facilities because of the multitude of variables which might be taken into account. Keeping in mind the problems associated with aggregate measures, they nevertheless can serve as rough guidelines.

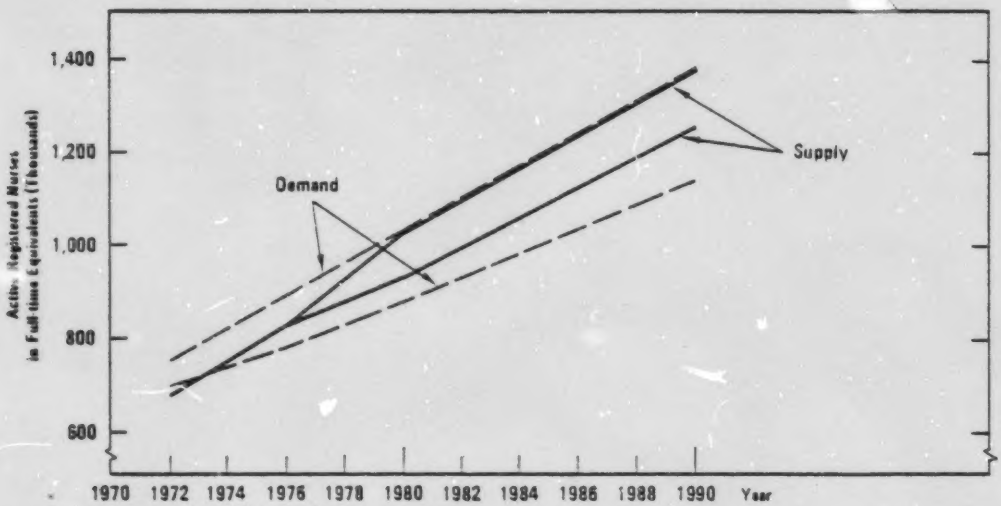
5/ U.S. Surgeon General's Consultant Group on Nursing, Toward Quality in Nursing: Needs and Goals, HEW (February 1963).

6/ American Hospital Association and National League of Nursing Education, Hospital Nursing Service Manual, (New York National League of Nursing Education, 1950).

7/ Adjusted patient days are inpatient days plus equivalent units of outpatient visits. Harry Levine and P. Joseph Phillip, Factors Affecting Staffing Levels and Patterns of Nursing Personnel, HEW, Bureau of Health Resources Development (February 1975).

If past increases in the demand for health care and in RN staffing levels in medical facilities continue, the demand for RNs may range from 17 percent below to 8 percent above the projected supply available for employment in 1990 (see Figure 1).

Figure 1. The Supply of and Demand for Registered Nurses if Current Trends Continue



SOURCES: Based on data from Tom Bergan and Gary Hirsch, *A National Model of Supply, Demand and Distribution: Final Report* (Pugh-Roberts Associates, Inc., February 1977) and Timothy Doyle, George Cooper, and Ronald Anderson, *The Impact of Health System Changes on the Nation's Requirements for Registered Nurses in 1985* (Vector Research, Inc., December 1976).

Assuming that past trends prevail to 1990, the results of one model, developed by Pugh-Roberts Associates, which simulated the interaction between supply and demand for RNs, show a close balance between demand for RNs and RNs available for employment throughout the simulation period, with the demand for RNs estimated to be 8 percent above supply by 1990. At the same time, the model predicts a substantial amount of upgrading of nursing staffs by employers which would create a surplus of practical nurses. Another estimate of increases in demand for RNs resulted

Each type of basic RN program prepares students for direct patient care, but the baccalaureate programs also train students in supervision, administration, and teaching as well. Baccalaureate nurses now comprise 17 percent of all professional nurses and their proportion is expected to grow to about 33 percent by 1990. A very rapid growth in the number of associate nurses is expected to level off and a decline in the number of nurses entering diploma programs is expected to continue (see Table 2). This shift toward collegiate training is explained in part by the increasing attractiveness of nursing programs that grant academic credit toward a degree and the increasing costs of maintaining diploma programs in hospitals.

TABLE 2. SUPPLY OF REGISTERED NURSES AVAILABLE FOR EMPLOYMENT, BY EDUCATIONAL PREPARATION, SELECTED CALENDAR YEARS, 1972-1990

	1972		1976		1980		1990	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Master's/ Doctoral	27,000	3	33,000	3	44,000	4	79,000	5
Baccalaureate	116,000	15	163,000	17	256,000	22	509,000	33
Associate/ Diploma	652,000	82	765,000	80	866,000	74	953,000	62
Total	795,000	100	961,000	100	1,166,000	100	1,541,000	100

SOURCE: Figures taken or derived from data in HEW, Health Resources Administration, Bureau of Health Manpower, Division of Nursing, First Report to Congress (February 1, 1977).

Concern has been expressed that too few nurses are academically prepared for the nursing responsibilities they undertake. Thus, a major thrust of the nursing profession has been toward advanced training for RNs in both conventional graduate programs and innovative nurse-practitioner programs. In 1976, an estimated 33,000 employed RNs, or 3 percent of all employed RNs, had a master's or doctoral degree. By 1990, this number

from a somewhat different model, developed by Vector Research, Inc. (VRI). Unlike Pugh-Roberts, VRI did not attempt to incorporate the impact of supply on demand into its analysis. When the VRI results are compared to the supply estimates in Table 1, a surplus of RNs is apparent. The estimated 1990 demand for RNs is 9 to 17 percent below the number of RNs available for employment. 8/

MORE NURSES ARE TRAINING IN COLLEGES AND UNIVERSITIES

Nursing leaders have suggested that all professional nurses should be trained in institutions of higher education rather than in hospitals, although it is not clear whether this would be desirable. At present, there are three types of training programs for RNs: diploma, associate, and baccalaureate, which differ by length, setting, and focus. The diploma programs are generally three-year hospital-based programs, while the associate and baccalaureate programs are two-and four-year degree granting programs, respectively, located in colleges or universities. 9/

8/ Both models represent the first work of this kind to estimate future demand for RNs. Thus, as further work is done in this area, the models may be refined. The VRI model appears to be the better specified of the two models, although this may be due to the more complex nature of the Pugh-Roberts analysis. The Pugh-Roberts model, however, may overstate demand for RNs and understate available supply of RNs. The Appendix contains a more thorough description of both models. To facilitate data comparisons, the VRI estimates were extrapolated to 1990 and the Pugh-Roberts estimates were converted to full-time equivalents. See Tom Bergan and Gary Hirsch, A National Model of Supply, Demand, and Distribution, Final Report (Cambridge, Mass.: Pugh-Roberts, Associates, Inc., 1977) and Timothy Doyle, George Cooper, and Ronald Anderson, The Impact of Health System Changes on the Nation's Requirements for Registered Nurses in 1985, (Ann Arbor, Michigan: Vector Research, Inc., December 1976).

9/ Nursing education has undergone a marked change since 1950 when 94 percent of all nursing schools had diploma programs. Of the 1,349 state-approved schools of nursing in 1976, 29 percent had diploma programs, 48 percent had associate programs, and 25 percent baccalaureate programs.

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is expected to more than double and comprise about 5 percent of those RNs available for employment. The training of nurse practitioners to perform medical in addition to nursing tasks is a relatively new concept. Nurse practitioners are registered nurses who receive advanced clinical training to provide first encounter, routine medical care traditionally performed only by physicians. They may also receive training for specialized clinical practice. In 1977, roughly 8,000 nurses, or about 1 percent of all employed RNs, were formally trained as nurse practitioners. Of these, about 80 percent were trained to give primary medical care. Formally trained nurse practitioners are projected to increase nearly fourfold to about 30,000, or about 2 percent of the total supply of RNs available for employment by 1990. 10/

Little objective evidence exists on the question of whether more nurses with advanced training are needed. One study of the effect of staff qualifications on nursing care on surgical wards in 17 hospitals did conclude that the higher the ratio of registered and graduate nurses to practical nurses, the better the quality of care. 11/ But, in general, appreciable differences in quality of care provided by different types of nurses are not well documented. Some investigators, however, have determined that large gaps exist between actual and ideal numbers of nurses with graduate or expanded-role training (see Table 3). 12/

10/ HEW, Health Resources Administration, Bureau of Health Manpower, Division of Medicine, Supply of Physicians and Physician Extenders (March 1977).

11/ W.R. Scott, W.H. Forrest and B.W. Brown, "Hospital Structure and Postoperative Mortality and Morbidity," Organizational Research in Hospitals, Chapter V (Blue Cross Association, 1976).

12/ Utilizing criteria of ideal levels of educational attainment for various nursing positions developed by the Surgeon General's Consultant Group of Nursing, the Western Interstate Commission on Higher Education (WICHE) concluded that in 1972 there should have been five times as many professional nurses with master's or doctoral degrees and twice as many with baccalaureate degrees than actually had that type of education preparation. (See HEW, First Report to

TABLE 3. 1972 ACTUAL AND DESIRABLE DISTRIBUTION AND 1990 PROJECTED DISTRIBUTION OF REGISTERED NURSES AVAILABLE FOR EMPLOYMENT, BY ACADEMIC PREPARATION

	1972 Supply		1990 Supply
	Actual	Desirable a/	Projected
Master's/Doctoral	27,000	135,000	79,000
Baccalaureate	116,000	232,000	509,000
Associate/Diploma	652,000	428,000	953,000
Total	795,000	795,000	1,541,000

SOURCES: Derived from data in Aleda Roth and Alice Walden, The Nation's Nurses, 1972 Inventory of Registered Nurses (Kansas City, Mo.: American Nurses' Association, 1974); and HEW, Health Resources Administration, Bureau of Health Manpower, Division of Nursing, First Report to Congress (February 1977).

a/ According to estimates developed by the Western Interstate Commission on Higher Education.

12/ Congress (February 1, 1977). Similarly, according to another nursing task force, approximately 24,600-52,500 nurse practitioners will be needed by 1982 or up to three times the available supply. This estimate was based on the criteria that nurse practitioners should be 10-13 percent of hospital ambulatory care RNs, 15-25 percent of RNs in physicians' offices, and 10-15 percent of RNs in public health. (See Eugene Levine, "What Do We Know About Nurse Practitioners?," American Journal of Nursing (November 1977).)

Despite uncertainty about the need for more highly trained RNs, the demand for these nurses appears to be high and may continue. Several factors may shape future trends. A growing number of baccalaureate, graduate, and nurse-practitioner nursing programs suggests a growing demand for faculty with graduate training. 13/ Similarly, if the complexity of medical technology and nursing responsibilities, such as hospital utilization review, continues to increase, upgrading of nursing staffs may also continue (putting nurses with lower levels of training at a disadvantage). More highly trained nursing personnel, however, may be more cost effective because of their high productivity and the eliminated need for supervision. On the other hand, with the likelihood of limited capital expenditures and closer scrutiny of hospital budgets and reimbursement in general, many hospitals may be reluctant to increase nursing budgets to accommodate more highly trained nursing personnel.

Because nurse practitioners perform medical as well as nursing services, future demand for nurse practitioners may be shaped by factors not pertinent to other nurses. Their future as medical providers may be determined primarily by physician acceptance and reimbursement practices, if legal barriers continue to diminish. So far, the relatively small number of nurse practitioners have had little difficulty finding jobs in expanded roles, but large increases in the supply of physicians, expected in the near future, could reduce the likelihood that physicians will employ nurse practitioners. Moreover, because third parties reimburse the supervising physician for services provided by nurse practitioners in fewer than half of the states, many physicians have little economic incentive to hire nurse practitioners even though they have a demonstrated ability to increase substantially physician productivity. The greatest potential for the utilization of nurse practitioners appears to be as nearly independent practitioners providing medical care in areas where physicians are in short supply. Furthermore, the recent enactment of the "Rural Health Clinic Services Act of 1977," which allows federal reimbursement under medicare and

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13/ A critical need for adequately prepared nursing faculty, particularly for nurse-practitioner nursing programs, is now frequently cited. At present, 61 percent of all full-time faculty in basic RN programs have a master's or higher degree. About 800, or 3 percent, of budgeted faculty positions are vacant.

medicaid to rural health clinics for services provided by nurse practitioners and physicians' assistants, could facilitate an increase in the demand for nurse practitioners in these areas. 14/

THE PROPORTION OF MINORITY REGISTERED NURSES HAS INCREASED BUT MAY STABILIZE IN THE FUTURE 15/

Minority RNs are underrepresented among professional nurses. Minorities were 12 percent of the total population in 1970, but comprised only about 5 percent of all employed RNs in 1972. 16/ But, because the number of minorities enrolled in basic programs in 1972 was higher than previous levels, the current proportion of employed minority RNs may be higher.

Prior to 1965, there were very few minorities enrolled in RN training programs. With the increase in the number of baccalaureate and associate degree nursing programs, larger class sizes, and greater possibilities for financial aid, the number of black students increased nearly fourfold to 7 percent of total RN enrollments in 1972; all minorities were about 10 percent. Proportionately fewer minorities were enrolled in graduate schools--about 7 percent of all students enrolled in a master's or doctoral program were from minority groups and about 4 percent were black.

14/ Public Law 95-210.

15/ The term "minority" refers to blacks, Hispanics, American Indians, and Orientals.

16/ Evelyn B. Moses, Follow-Up to 1972 Inventory of Registered Nurses, 1974, Executive Summary, HEW Health Resources Administration, Bureau of Health Manpower, Division of Nursing (in preparation). There is some uncertainty concerning the actual number of minority RNs. For example, the U.S. Bureau of the Census reports that blacks and Hispanics were 10 percent of all employed RNs in 1970. Its total count of employed registered nurses, however, is 15 percent higher than that reported in other reliable sources. One explanation may be that some practical nurses were counted as registered nurses. Moreover, because a disproportionate number of practical nurses are minorities, this could have led to an upward bias in the count of minority registered nurses.

Current minority enrollment shares in nursing schools remain at about the 1972 levels, except in associate degree programs where they appear to have dropped from 14 percent in 1972 to about 8 percent in 1975. 17/ The underlying reasons for this drop are not clear but could be related to the reported difficulty of some associate nurses in finding jobs, especially since employed minority RNs are more likely to have graduated from the shorter, less expensive associate programs than other nurses. Other possibilities are that nursing careers are declining in attractiveness to minorities, available financial aid is inadequate, or that careers in other fields are becoming more accessible. Since the proportion of minorities in basic RN programs is comparable to that in postsecondary schools in general and approaching that in the population, further large increases may be unrealistic.

Minority nurses appear to contribute more than others to providing better access to nursing care for disadvantaged populations. They are much more likely to be active in nursing practice and to work longer hours than their counterparts. Employed minority nurses are more likely to work in urban communities and in the southern and western areas of the country where many low-income people live and where nurses are in shorter supply. Although the majority of both minority and white nurses are employed in hospitals, minority nurses are less likely to work in nursing homes or physicians' offices and more likely to work in public health and community health agencies that tend to have low-income and minority users. 18/

THE GEOGRAPHIC DISTRIBUTION OF NURSES IS UNEVEN

As with other health professionals, the geographic distribution of nurses is uneven. While variations in health status among population groups might require unequal nurse-to-population ratios across the country, the size of the variations in these

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17/ Differences in survey data and techniques make interpretation of trends from 1972 to 1975 difficult. See Walter L. Johnson, "The Educational Preparation for Nursing - 1975," Nursing Outlook, (September 1976).

18/ Evelyn B. Moses, op cit.

ratios suggests that inequities, not simply inequalities, may exist. On a regional basis, the number of full-time equivalent RNs per 100,000 persons ranged between regions from 210 RNs in the East South Central region to 478 RNs in the New England region in 1972 (see Table 4). Of the 523 counties designated by the Department of Health, Education, and Welfare as professional nurse manpower shortage areas in 1976, over half were in southern states. 19/ .

The job-hunting experiences of newly licensed RNs confirms the regional variations in the supply of and demand for nurses. These nurses appear to have little difficulty finding jobs, particularly in states with low RN per population ratios. The proportions of individuals reporting "many jobs were available" ranged from 3 to 21 percent in the New England and Middle Atlantic states to 24 to 66 percent in southern and two western states (see Table 5).

In the southern regions, where RNs are least available, there appears to be a substitution of practical nurses for registered nurses, with uncertain consequences for quality of patient care. Of all regions, the East South Central and West South Central regions have the lowest number of RNs but the highest number of PNs per capita. Similarly, a survey of staffing practices in short-term general hospitals indicates that the bulk of all nursing hours in these regions is provided by practical nurses, aides, and orderlies. In regions where RNs are more available, a much smaller proportion of nursing hours are provided by other types of nursing personnel (see Table 6).

19/ States with the largest proportion of all counties designated as shortage area counties are Tennessee (66 percent), Arkansas (51 percent), Alabama (42 percent), Oklahoma (42 percent), Missouri (41 percent), Georgia (36 percent), Texas (35 percent), Louisiana (30 percent), Kentucky (26 percent), Mississippi (24 percent), and West Virginia (24 percent). These are counties whose supply of professional nurses measured against utilization of nursing services ranks in the lowest quartile of all counties.

TABLE 4. DISTRIBUTION OF REGISTERED AND PRACTICAL NURSES AVAILABLE FOR EMPLOYMENT, PER 100,000 PERSONS, BY CENSUS DIVISION, SELECTED CALENDAR YEARS, 1972-1980

Full-Time Equivalent RNs per 100,000 Population, 1972, 1976, and 1980

	1972		1976		1980	
	Number	Percent of U.S National Average	Number	Percent of U.S. National Average	Number	Percent of U.S. National Average
United States	325	100	383	100	447	100
New England	478	147	551	144	604	135
Middle Atlantic	405	125	476	124	503	113
South Atlantic	302	93	358	93	447	100
East South Central	210	65	275	72	365	82
West South Central	213	66	271	71	373	83
East North Central	321	99	366	96	425	95
West North Central	337	104	409	107	470	105
Mountain	348	107	428	112	508	114
Pacific	304	94	344	90	386	86

Full-Time Equivalent PNs Per 100,000 Population, 1974 and 1980

	1974		1980	
	Number	Percent of U.S. National Average	Number	Percent of U.S. National Average
United States	186	100	223	100
New England	196	105	201	90
Middle Atlantic	184	99	219	98
South Atlantic	176	95	223	100
East South Central	231	124	290	130
West North Central	249	134	302	136
East North Central	166	89	195	88
West North Central	186	100	235	105
Mountain	169	91	210	94
Pacific	167	90	209	94

SOURCES: Calculated from data in Aleda Roth and Alice Walden, The Nation's Nurses, 1972 Inventory of Registered Nurses (Kansas City, Mo.: American Nurses' Association, 1974); U.S. Department of Commerce, Bureau of the Census, Current Population Reports, series P-25, nos. 632 and 636 (1976); U.S. Department of Commerce, Bureau of Economic Analysis, Area Economic Projections 1990 (1976); HEW, Health Resources Administration, Bureau of Health Manpower, Division of Nursing, First Report to Congress, Appendix I (February 1, 1977).

TABLE 5. REGISTERED NURSE PERCEPTIONS OF JOB AVAILABILITY, ORDERED BY STATE, AND CLUSTERED BY REGION: (RNs NEWLY LICENSED IN JULY 1975)

New England and Middle Atlantic		West and Southwest		Midwest		South	
Vermont	(3.4)						
Connecticut	(3.8						
Rhode Island	(4.8)						
		Arizona	(5.7)				
New York	(7.0)	Washington	(7.7)				
		Hawaii	(9.9)				
New Jersey	(10.1)						
Maine	(12.6)						
		Oregon	(14.0)				
		Colorado	(14.3)				
		Alaska	(17.9)				
				S. Dakota	(18.9)		
		Montana	(19.5)				
		Idaho	(21.0)				
Pennsylvania	(21.4)	Wyoming	(22.4)			N. Carolina	(24.1)
		New Mexico	(25.4)			Georgia	(24.2)
						Florida	(29.6)
						W. Virginia	(31.5)
						Kentucky	(32.0)
				N. Dakota	(36.3)	S. Carolina	(38.5)
						District of Columbia	(38.6)
				Missouri	(39.2)	Tennessee	(40.9)
						Arkansas	(45.6)
						Texas	(47.0)
						Mississippi	(54.9)
		Utah	(55.6)			Louisiana	(66.3)

SOURCE: Walter L. Johnson, "Supply and Current Demand for Nurses in the Light of a Survey of Newly Licensed Nurses," in Michael Millman, ed., Nursing Personnel and the Changing Health Care System (Ballinger, 1978)

NOTE: The number in parenthesis following the state is the proportion of individuals who stated "many jobs were available."

TABLE 6. DISTRIBUTION OF TOTAL NURSING HOURS IN SHORT-TERM, GENERAL HOSPITALS, a/ BY CENSUS DIVISION, 1970

Region	Full-Time Equivalent RN Per 100,000 Population	Percent Distribution of Total Nursing Hours			
		RN	PN	Aides and Orderlies	TOTAL
New England	478	56	19	26	100
Middle Atlantic	405	50	19	32	100
Mountain	348	46	20	37	100
West North Central	337	41	18	43	100
East North Central	321	42	19	40	100
Pacific	304	49	18	34	100
South Atlantic	302	40	21	41	100
West South Central	213	28	31	42	100
East South Central	210	29	27	44	100

SOURCE: Harry Levine and P. Joseph Phillip, Factors Affecting Staffing Levels and Patterns of Nursing Personnel, HEW, Bureau of Health Resources Development (February 1975).

NOTE: Details may not add to 100 percent because of rounding.

a/ Based on the American Hospital Association annual survey of short-term, general hospitals, 1970.

Whether the quality of patient care suffers in hospitals with low RN per patient ratios or RNs are simply utilized more efficiently is not clear. While there is disagreement concerning the relationship between RN staffing intensity and quality of patient care, few studies have addressed this issue, in part, because of the difficulty in developing evaluative criteria. 20/ In one detailed study, the quality of nursing care in 103 nursing units in 19 hospitals of differing size and character was assessed as part of a national trial of a quality-monitoring methodology. Although numerous factors, such as hospital size and complexity, were found to be related, no single factor was a strong determinant of quality care. The most influential factors were found to be characteristics of nursing unit organization. Significantly, the units receiving the highest quality scores were, on average, smaller units, better coordinated, and had almost twice as many RN hours per patient day and fewer paraprofessional hours per patient day than the lowest scoring units. 21/.

Relative to two indicators of need, it appears that a surplus of RNs would exist in most regions of the country by 1980. Using the 1970 full-time equivalent RN per population goal recommended by the SGCGN as a minimal standard, the ratios of all regions are above the recommended ratio of 353. In particular, the New England and Middle Atlantic regions have ratios that are 71 and 42 percent, respectively, greater than the minimal standard. Using the HEW estimate of RNs needed in 1980 as a minimal standard, three regions--the East South Central, West South Central, and Pacific regions--would still have too few RNs. The most disadvantaged region would have 87 percent of the recommended ratio of 421.

20/ Myrtle Aydelotte, "Trends in Staffing of Hospitals: Implications for Nursing Resources Policy," in Michael Millman, ed., Nursing Personnel and the Changing Health Care System (Ballinger, 1978); and Eugene Levine, "Some Answers to the Nurse Shortage," Nursing Outlook, (March 1964).

21/ R. K. Dieter Haussman, Sue T. Hegyvary and John F. Newman, Monitoring Quality of Nursing Care, Part II, Assessment and Study of Correlates, HEW, Bureau of Health Manpower, Division of Nursing (July 1976).

Relative geographic disparities in the supply of RNs available for employment are likely to continue, however, partly because the practice location of nurses is tied to the location and characteristics of medical facilities and physicians which tend to be concentrated in or near urban areas. Hospitals, traditionally, have been the primary employer of professional nurses. Nearly two-thirds of all employed RNs are working in a hospital. Nursing homes, physicians' offices, and public health facilities are the next largest employers for nurses. Working conditions as well as economic incentives may be important determinants of a nurse's choice of facility. Professional nurses appear to be very sensitive to required shift rotation, workload, and advancement opportunities. Sparsely populated and inner city areas appear to be unattractive locations for professional nurses because facilities in these areas, in addition to paying low wages, tend to have high patient loads or relatively large numbers of lesser skilled nursing personnel who require supervision. There has been little evidence, however, of wage adjustments taking place to alleviate perceived problems of shortage. Inactive and part-time nurses in areas with few RNs may be encouraged to enter the full-time labor force with refresher courses, flexible working hours, and day care facilities for children. Some of these incentives, however, may be difficult to bring about through federal action. 22/

Particular types of nurses may be more amenable to locating in areas with few RNs. Nurse practitioners especially have located in rural and inner-city areas in significant numbers. Fifty percent of a sample of 1974 graduates were employed in either inner-city or rural locations. 23/ This may be partly

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22/ Frank Sloan, The Geographic Distribution of Nurses and Public Policy, HEW, Bureau of Health Manpower, Division of Nursing (May 1976); Aleda Roth and Naomi Patchin, "Geographic Distribution of Nurses in Relation to Perceived Recruiting Difficulties and Economic Conditions," in Michael Millman, ed., Nursing Personnel and the Changing Health Care System (Ballinger, 1978).

23/ Harry A. Sultz, Maria Zielezny, and Jane Mathews, "Highlights: Phase 2 of a Longitudinal Study of Nurse Practitioners," in Michael Millman, ed., Nursing Personnel and the Changing Health Care System (Ballinger, 1978).

because many nurse-practitioner programs include a rural or inner-city clinical training component that gives nurses experience in that area. Also, some programs in areas with few nurses select only local residents with the expectation that they will practice in that community.

SUMMARY

Several conclusions can be drawn from trends in the supply of and demand for RNs. The aggregate supply of RNs appears to be adequate both now and in the future to meet national needs, although future surpluses in some areas seem possible. There is inconclusive evidence as to whether more nurses with advanced skills are needed or would be hired by employers. If cost constraints are few and qualified RNs become more available, employers may continue to hire RNs with advanced training over RNs with basic training, and all types of RNs over practical nurses and aides. Continued upgrading of nursing staffs could pose problems for the large proportion of RNs who have associate degree training and for those who lack access to graduate training. Trends in the geographic distribution of nurses suggest a need and potential demand for nurse practitioners in areas with relatively few RNs and other health professionals. Geographic disparities are likely to improve slightly but not substantially without stronger incentives or more specific targeting efforts to draw nurses into areas with relatively fewer RNs per capita. Coordination of policies that focus on development of other resources in those areas with policies that address only nursing resources may be required.

CHAPTER III. THE IMPACT OF MAJOR HEALTH SYSTEM CHANGES ON THE SUPPLY OF AND DEMAND FOR REGISTERED NURSES

The aggregate supply of professional nurses could continue to be in rough balance with demand by 1990 if there are no radical changes in current patterns of health care delivery or utilization. Nonetheless, demand could shift if the health care system changes substantially. The results from two research efforts--the Pugh-Roberts and VRI models--are used in this chapter to examine the impact of potential health system changes on future demand for nurses. Major developments could be:

- Implementation of national health insurance;
- Widespread growth of prepaid group practices; and
- Expansion of nursing roles.

Both the Pugh-Roberts analysis, which considered the interaction between future supply and demand for RNs, and the VRI analysis, which considered only future demand, found that a small to moderate increase (less than 20 percent) in demand for RNs would result from implementation of national health insurance and a more substantial increase (less than 30 percent) would result from nursing role expansion. In addition, the VRI analysis concluded that widespread growth of prepaid group practices alone would cause a slight reduction (about 3 percent) in the demand for RNs, but that, if all three health system changes occurred at the same time, demand for RNs could increase dramatically (by as much as 50 percent). 1/

1/ All references to demand refer to full-time equivalents unless otherwise noted. Similarly, all references to supply refer to full-time equivalent RNs available for employment. All shifts in demand due to health system changes refer to increments over or below a baseline demand that would be expected if current trends continue. Again, to facilitate data comparisons, the Pugh-Roberts estimates were converted

THE IMPACT OF THE IMPLEMENTATION OF NATIONAL HEALTH INSURANCE

A national health insurance (NHI) plan would affect demand for nurses by increasing demands for services that nurses provide. The magnitude of the increase would be shaped by the extent to which consumers would have to pay out-of-pocket; that is, whether deductibles or coinsurance would be required. Influenced by cost-sharing and benefit provisions, the setting in which services are provided might also affect the number and type of nurses required.

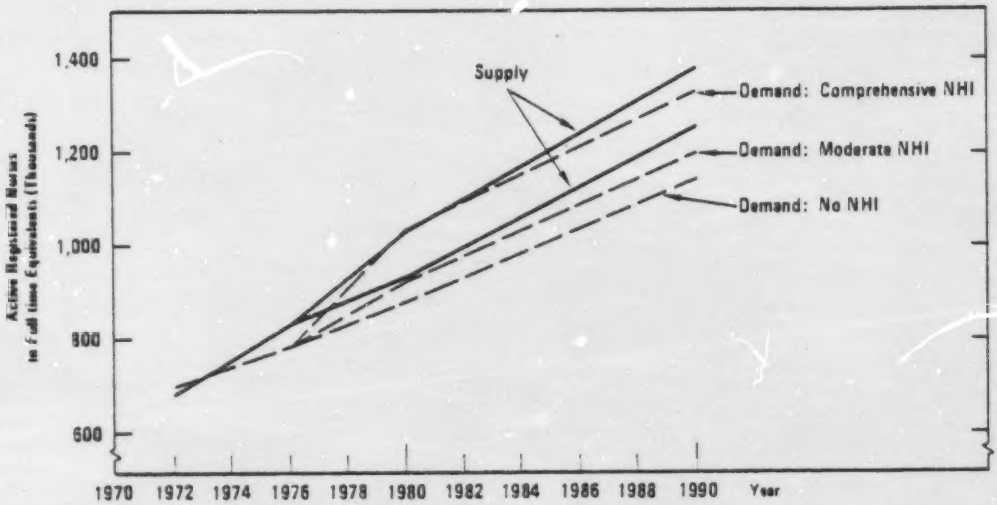
The VRI analysis of the impact of two prototypical national health insurance schemes indicates that demand for nurses through 1990 would not significantly exceed the supply of RNs available for employment if either plan were implemented in 1979. The first NHI scenario would extend to the entire population insurance coverage of hospital and ambulatory care servites at benefit and cost-sharing levels currently enjoyed by the insured population. The new coverage would involve primarily ambulatory care services. In 1990, total demand for RNs would fall 4 to 13 percent below the available supply, representing a 5 percent increase over total demand with no NHI. The second NHI scenario would provide for free comprehensive and unlimited services for the entire population. Total demand for RNs would increase 17 percent over total demand with no NHI but only about 3 percent below to 6 percent above the available supply.

In both NHI scenarios, demand for nurses in the ambulatory care sector would be greatly increased because nearly the entire population now has some kind of insurance coverage for inpatient hospital services. All of the increase in demand in the first scenario and about 77 percent of the increase in the comprehensive scenario would occur in outpatient clinics and physicians'

1/ to full-time equivalents and the VRI estimates were extrapolated to 1990. See Tom Bergan and Gary Hirsch, A National Model of Supply, Demand and Distribution, Final Report, (Pugh-Roberts Associates, Inc., 1977) and Timothy Doyle, George Cooper, and Ronald Anderson, The Impact of Health System Changes on the Nation's Requirements for Registered Nurses in 1985 (Vector Research, Inc., December 1976).

offices (see Figure 2). The VRI estimate may be understated because this study considered the impact of NHI in only three RN practice settings: short-term general hospital inpatient and outpatient settings and physicians' offices. Although the impact on other settings, such as in schools and industry, would likely be minimal, any NHI plan adopted by the Congress that included regulatory reform of the nursing home industry might increase the demand for RNs by another 5 percent.

Figure 2. The Impact of National Health Insurance (NHI) on the Demand for Registered Nurses: Vector Research, Inc.



SOURCES: Based on data from Tom Bergan and Gary Hirsch, *A National Model of Supply, Demand and Distribution*, Final Report (Pugh-Roberts Associates, Inc., February 1977), and Timothy Dovle, George Cooper, and Ronald Anderson, *The Impact of Health System Changes on the Nation's Requirements for Registered Nurses in 1985* (Vector Research, Inc., December 1978).

The Pugh-Roberts simulations did consider all RN practice settings. They produced similar increases in demand for RNs in response to NHI and also increases in supply. In 1990, the increase in demand for professional nurses, with national health insurance, was found to be 4 to 8 percent more than demand if current trends continue. The increase in the supply of RNs available for employment was estimated to be 2 to 5 percent more

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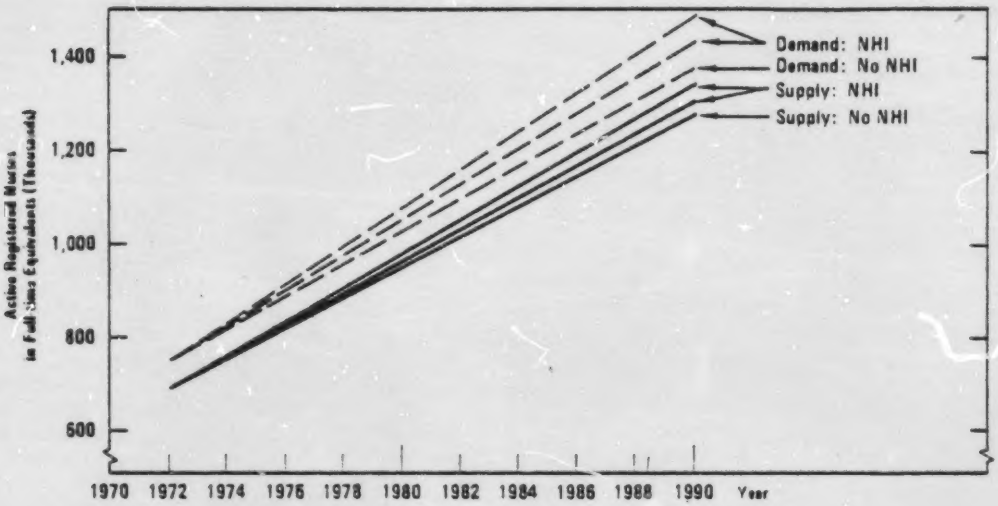
than the baseline estimates of the available supply. All in all, the demand for RNs under national health insurance might reach 10 to 11 percent above the available supply in 1990 (see Figure 3). 2/

Figure 3. The Impact of National Health Insurance (NHI) on the Supply of and Demand for Registered Nurses: Pugh-Roberts Associates, Inc.



SOURCE: Based on data from Bergan and Hirsch, *A National Model of Supply, Demand and Distribution*, Final Report.

2/ These estimations of the increase in the demand for registered nurses because of national health insurance are substantiated by the analysis in The Impact of Comprehensive National Health Insurance On Demand for Health Manpower, HEW, Health Resources Administration, Bureau of Health Manpower (July 1976). In that study, implementation of the Comprehensive Health Insurance Plan (CHIP) in 1976 was found to raise the demand for registered nurses by 4 to 5 percent.

THE IMPACT OF WIDESPREAD GROWTH OF PREPAID GROUP PRACTICES

The growing emphasis on preventive health services has stimulated the development of prepaid group practices--most commonly known as health maintenance organizations (HMOs). HMOs provide comprehensive medical services and preventive care at a fixed price paid in advance by each enrollee. Because an incentive exists to contain costs within a predetermined budget, HMOs tend to make more intensive use of nursing personnel as a substitute for other, more costly professionals. Widespread growth of HMOs would thus increase future demand for nurses in this type of delivery setting. At the same time, the lower inpatient hospital utilization of enrollees in HMOs compared to that of the general population might create downward pressure on demand for nurses in hospitals.

Aggregate demand for nurses in 1990 would be slightly reduced if HMOs were to increase at a relatively high rate, according to VRI findings. The reduction reflects primarily a decrease in demand for nurses in short-term hospitals. If roughly 65 new HMOs were formed each year, so that 11 percent of the population were enrolled by 1985, overall demand for nurses would decline by 3 percent. Total demand would fall 11 to 19 percent below the supply of RNs available for employment (see Figure 4). 3/

THE IMPACT OF THE EXPANSION OF NURSING ROLES

Recent increases in nurses' skills and responsibilities may affect demand for RNs in both hospital and ambulatory care settings. The growth of the primary nursing concept since about 1970 could increase demand for nurses in hospitals while

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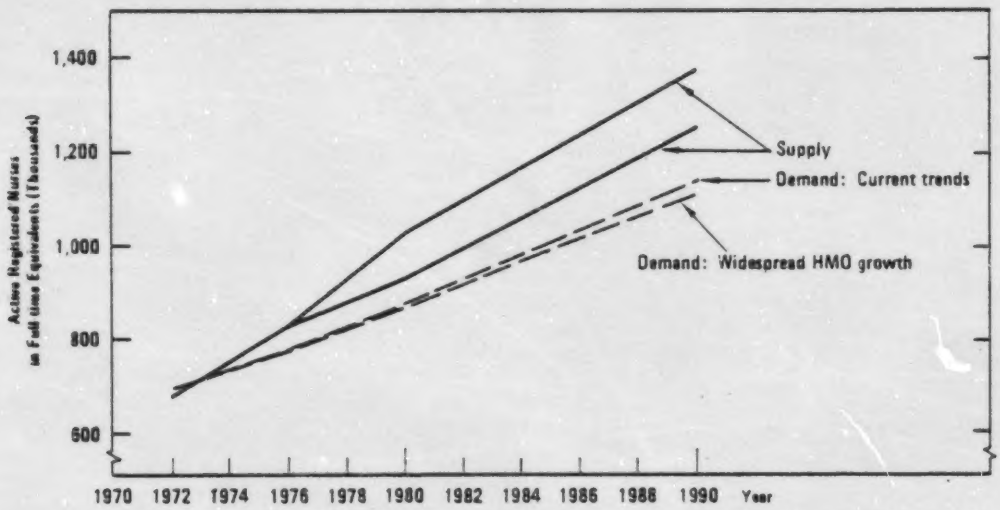
3/ Currently, about 3 percent of the population are enrolled in HMOs. The VRI findings are corroborated by John L. Swift, Ramiro Montaluo and John Ward, in HMO's ... Their Potential Impact on Health Manpower Requirements, HEW, National Institutes of Health (May 1973). Pugh-Roberts Associates did not estimate the effects of HMO expansion on demand for and supply of RNs. Applying a similar 3 percent reduction in demand to Pugh-Roberts' 1990 baseline estimates and assuming no effects on available supply implies that total demand in 1990 would be 4 percent above available supply.

Figure 4. The Impact of Widespread Growth of Health Maintenance Organizations (HMOs) on the Demand for Registered Nurses



SOURCES: Based on data from Tom Bergan and Gary Hirsch, *A National Model of Supply, Demand and Distribution: Final Report* (Pugh-Roberts Associates, Inc., February 1977), and Timothy Davie, George Cooper, and Ronald Anderson, *The Impact of Health System Changes on the Nation's Requirements for Registered Nurses in 1985* (Vector Research, Inc., December 1976).

concomitantly reducing demand for less skilled personnel. In primary nursing, one nurse provides patient care for a small number of patients and assumes total responsibility for those patients throughout their hospital stay. In nursing units that have switched to primary nursing, the staffing mix has changed to more intensive use of RNs. Similarly, the increasing complexity of medical technology has increased the scope of nursing responsibilities in inpatient care and has stimulated an increase in formal training programs to prepare RNs with advanced and

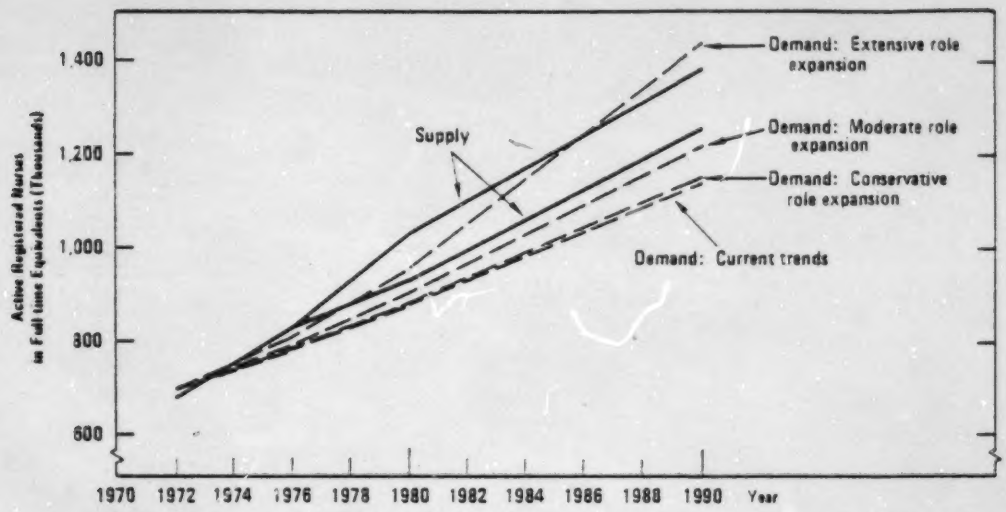
specialized clinical skills. To the extent that these clinical nurse specialists perform duties not traditionally performed by RNs, demand for nurses with this type of training may increase. In ambulatory care, widespread provider and patient acceptance of nurse practitioners could result in substantial increases in demand for nurse practitioners either in roles that extend the capacity of physicians or as independent practitioners.

Under three scenarios of low, moderate, and high growth of role expansion, VRI estimated that overall increases in baseline demand for nurses could range from 1 to 26 percent, with most of the increase occurring in hospitals. The most conservative scenario of role expansion would result in only a 1 percent increase in demand for RNs in 1990. Total demand would fall 8 to 16 percent below the supply of RNs available for employment. At the other extreme, under a high growth scenario, total demand would climb to as much as 15 percent above the available supply. Whether this magnitude of role expansion would actually be achieved is uncertain, particularly because the primary nursing concept is new. A more plausible scenario would be between the two extremes, with total demand estimated to be 3 to 11 percent below the projected supply in 1990 (see Figures 5 and 6). 4/

Similar to the VRI model, the Pugh-Roberts simulation of extensive role expansion predicted shortages in 1990. Demand for RNs was estimated to increase 20 percent, while in response, the active supply was estimated to increase only 10 percent. Overall, demand for RNs would reach 17 percent above the available supply in 1990.

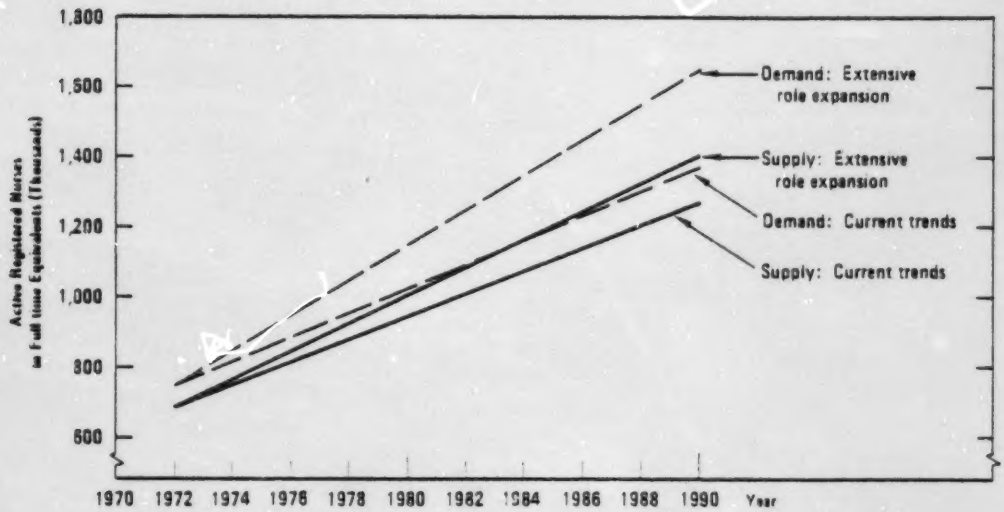
4/ The low growth scenario postulates 10 percent of all nursing inpatient units with primary nursing, 50 percent of clinical nurse specialists in new roles, and 35 percent of unmet demand for physician office visits satisfied by nurse practitioners by 1985. The high growth scenario assumes 80 percent of all nursing inpatient units with primary nursing, 100 percent of all clinical nurse specialists in new roles, and 100 percent of unmet demand for physician office visits satisfied by nurse practitioners. The values of variables for the moderate growth scenario are midway between those for the low and high growth scenarios.

Figure 5. The Impact of Nursing Role Expansion on the Demand for Registered Nurses: Vector Research, Inc.



SOURCES: Based on data from Tom Bergan and Gary Hirsch, *A National Model of Supply, Demand and Distribution, Final Report*, Pugh-Roberts Associates, Inc., February 1977; and Timothy Dovle, George Cooper, and Ronald Anderson, *The Impact of Health System Changes on the Nation's Requirements for Registered Nurses in 1985* (Vector Research, Inc., December 1976).

Figure 6. The Impact of Nursing Role Expansion on the Supply of and Demand for Registered Nurses: Pugh-Roberts Associates, Inc.



SOURCE: Based on data from Bergan and Hirsch, *A National Model of Supply, Demand and Distribution, Final Report*.

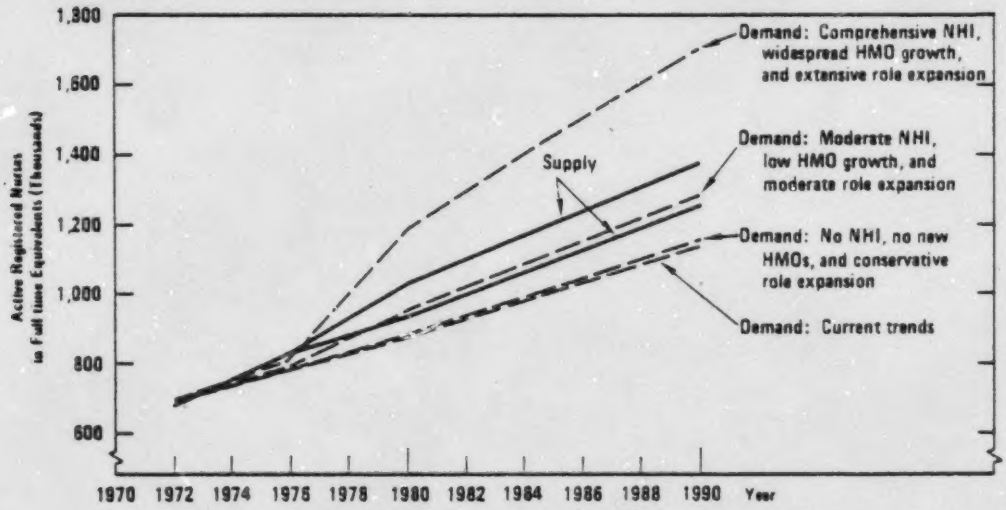
THE COMBINED IMPACT OF NATIONAL HEALTH INSURANCE, WIDESPREAD GROWTH OF PREPAID GROUP PRACTICES, AND EXPANSION OF NURSING ROLES

The projected supply of nurses available for employment appears to be adequate to meet increases in demand resulting from national health insurance, widespread HMO growth, or moderate role expansion; deficiencies would be created by extensive role expansion. Because each of these health system changes could occur simultaneously and have interactive effects, the overall balance between supply and demand could be quite different. VRI has estimated the combined impact of these changes on the demand for nurses. Under a conservative scenario of no NHI; no new, but continued growth of existing HMOs; and little role expansion, the demand for RNs would increase by only 1 percent over the baseline demand in 1990. Alternately, comprehensive NHI coupled with high HMO growth and extensive role expansion could create large shortages of nurses. Overall demand would increase by 50 percent and would be 24 to 37 percent above the available supply. The increase in demand for ambulatory services stimulated by NHI coupled with nurses' assuming greater responsibilities would accelerate the demand for nurse practitioners and other nurses in outpatient facilities. Consequently, the demand for nurses in physicians' offices would more than triple. The driving force behind the dramatic increases is the extent of role expansion postulated. Again, whether this magnitude of expansion would occur, particularly in hospitals, is not known. In a scenario with moderate NHI, moderate HMO growth, and moderate role expansion, a rough balance between demand and available supply of RNs would exist. Total demand would increase by 12 percent by 1990, but would range from 7 percent below to 2 percent above the available supply (see Figure 7).

SUMMARY

In general, the supply of RNs available for employment through 1990 is likely to be sufficient to meet the demands of major potential health system changes, both combined and individually. With one or a combination of health system changes, the results of the VRI analyses indicate that demand for RNs in 1990 could range from 19 percent below to 37 percent above the available supply. The Pugh-Roberts demand estimation was 10 to 17 percent above the available supply in 1990. Two considerations suggest a sufficiency of nurses on a national basis, even

Figure 7. The Combined Impact of National Health Insurance (NHI), Growth of Health Maintenance Organizations (HMOs), and Nursing Role Expansion on the Demand for Registered Nurses


1,800
1,600
1,400
1,200
1,000
800
600
Active Registered Nurses in Full-time Equivalents (Thousands)
1970 1972 1974 1976 1978 1980 1982 1984 1986 1988 1990 Year
Demand: Comprehensive NHI, widespread HMO growth, and extensive role expansion
Demand: Moderate NHI, low HMO growth, and moderate role expansion
Supply
Demand: No NHI, no new HMOs, and conservative role expansion
Demand: Current trends

SOURCES: Based on data from Tom Bergan and Gary Hirsch, *A National Model of Supply, Demand and Distribution: Final Report* (Pugh-Roberts Associates, Inc., February 1977) and Timothy Davis, George Cooper, and Ronald Anderson, *The Impact of Health System Changes on the Nation's Requirements for Registered Nurses in 1985* (Vector Research, Inc., December 1976).

with health system changes that indicate potential shortages. First, successful efforts to limit the rate of hospital growth and unnecessary utilization would temper increases in demand for nurses in hospitals. 5/ Second, by 1990 there will exist a

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5/ A number of existing and proposed planning and regulatory mechanisms could slow hospital growth and utilization. These include: (1) proposed planning standards of no more than 4.0 short-term hospital beds per 1,000 persons and an 80 percent occupancy rate for each of the 212 health service areas; (2) state certificate-of-need programs in which capital spending over a certain amount by institutions must be reviewed and

supply of roughly 300,000 to 600,000 inactive RNs who, by maintaining a license, indicate some interest in becoming active in nursing and potentially could be drawn into the labor force. 6/

5/ justified; (3) Professional Standard Review Organizations (PSROs) which review the quality and appropriateness of medical care services; and (4) hospital cost containment proposals that would place a ceiling on hospital revenue increases.

6/ One study of RNs licensed in 1972 indicated that 42 percent of those not actively seeking employment at the time of the study would probably return to nursing at some time in the future. The most prominent reasons cited for nursing inactivity were family and personal needs and the lack of financial necessity. See Evelyn B. Moses, op cit.

CHAPTER IV. FEDERAL PROGRAMS FOR NURSING SCHOOLS AND STUDENTS

Prior to 1964, federal programs for nursing were fragmented. Growing concerns over a severe shortage of nurses, however, prompted a set of recommendations by the Surgeon General's Consultant Group on Nursing for an expanded and coordinated federal involvement in nursing education and training. Guided by that group's recommendations, the Congress enacted the Nurse Training Act of 1964 that consolidated and expanded previous nursing training legislation into the first of a series of comprehensive programs. This act and each successive version until 1975 broadened the purposes for which funds could be granted to nursing schools.

The Nurse Training Act of 1975 (NTA) is directed toward four national purposes:

- to ensure an adequate supply of nurses and stimulate improvements in nursing education and practice,
- to improve the geographic distribution of nurses,
- to increase the availability of nurses with advanced training, and
- to expand minority group enrollment in nursing schools.

Programs that address or influence these objectives and their effects are the focus of this chapter. Other federal programs pertinent to nursing education and training are also briefly reviewed.

CURRENT STATUS OF PROGRAMS AUTHORIZED BY THE NURSE TRAINING ACT OF 1975

Federal assistance to nursing schools under the Nurse Training Act of 1975 (NTA) will total $125.5 million in fiscal year 1978 (see Table 7). The programs authorized under NTA include both institutional and student assistance. 1/

Institutional Assistance

Funding for programs that provide institutional support to nursing schools will total $78.5 million (63 percent of all NTA support) in fiscal year 1978. Overall, NTA institutional support will be roughly equivalent to 8 percent of the total net costs to these schools of training nurses in fiscal year 1978. 2/

1/ These programs are administered primarily by HEW, Health Resources Administration, Bureau of Health Manpower, Division of Nursing.

2/ These estimates are intended to convey only a general idea about the federal contribution to the total costs of training nurses and must be used cautiously because educational costs tend to vary widely even within types of programs. Costs were calculated by multiplying the average annual net educational cost per student for basic RN (diploma, associate and baccalaureate); master's and doctoral; and nurse-practitioner programs by the estimated student enrollment in each type of program. Estimates of the average annual net educational cost per student for basic RN programs were taken from the National Academy of Sciences, Institute of Medicine, Costs of Education in the Health Professions, Report of a Study, Parts I and II, and were adjusted for inflation. Master's and doctoral programs were assumed to experience costs similar to those of baccalaureate programs. Finally, the educational costs for nurse practitioner programs were calculated from data covering 86 programs in System Sciences, Inc., Nurse Practitioner and Physician Assistant Training and Deployment Study, HEW, National Center for Health Services Research (September 1976).

TABLE 7. NURSING EDUCATIONAL ASSISTANCE UNDER THE NURSE TRAINING ACT OF 1975, FISCAL YEARS 1976-1978: DOLLARS IN THOUSANDS

	1976		1977		1978	
	Authorized	Actual	Authorized	Actual	Authorized	Appropriation
Institutional Assistance						
Construction	21,000	0	21,000	0	21,000	3,500
Financial Distress	5,000	0	5,000	0	5,000	0
Capitation	50,000	44,000	55,000	39,600	55,000	30,000
Special Projects	15,000	13,400	15,000	14,800	15,000	15,000
Nurse Practitioners	15,000	3,000	20,000	9,000	25,000	13,000
Advanced Nursing Training	15,000	2,000	20,000	8,100	25,000	12,000
Nursing Research	a/	2,500	a/	5,000	a/	5,000
Student Assistance						
Loans	125,000	21,000	30,000	22,200	35,000	22,500
Loan Repayment	b/	a/	b/	a/	b/	1,500
Scholarships	c/	6,000	c/	6,400	c/	9,000
Traineeships (for advanced training)	15,000	13,000	20,000	12,900	25,000	13,000
Fellowships (for research training)	d/	100	d/	600	d/	1,000
Total	161,000	105,000	186,000	118,600	206,000	125,500

SOURCES: Figures for appropriation authorizations from Title VIII (nurse training) of the Public Health Service Act. Figures for 1976 and 1977 actual expenditures from the HEW, Health Resources Administration, Bureau of Health Manpower, Division of Nursing. Figures for 1978 appropriations from HEW, Health Resources Administration, Justification of Appropriation Estimates for Committee on Appropriations, Fiscal Year 1979; Volume IV.

a/ Not available.

b/ Included under loans.

c/ Determined by statutory formula based on enrollment.

d/ Included under nurse traineeships.

These programs are designed to accomplish five basic objectives:

- In order to maintain and expand the capacity of basic nursing schools, federal aid is authorized for the construction of teaching facilities and for capitation grants (institutional aid awarded according to a formula based on the number of students enrolled in a school).

- Financial assistance for special projects in nursing is intended to improve the geographic distribution of nurses and encourage the recruitment and retention of minority students.

- Along with research grants, federal funding of special projects is also intended to stimulate improvements in nursing education and practice.

- A larger supply of nurses with advanced training and, as a result, improved nursing education and practice is the intended purpose of federal aid for graduate nursing and nurse-practitioner programs.

- An additional anticipated result of federal support of nurse-practitioner programs is the alleviation of geographic distributional imbalances of health care workers.

Construction Assistance. Federal subsidies for construction projects enable nursing schools to maintain or increase the number of student places by renovating or adding to existing facilities. Under present law, the federal government may provide up to 75 percent of the construction costs of new schools or schools expanding teaching facilities and up to 67 percent of the costs for other construction projects as well as loan guarantees and interest subsidies. Special consideration is to be given to projects that enhance the capacity of a school to provide graduate training.

In general, there has been a moratorium on new construction awards since 1975 although one new award gave $3.5 million in fiscal year 1978 to an intercollegiate nursing education center in the Pacific Northwest. NTA construction expenditures in fiscal year 1976 contributed to an increase of almost 600 first-

year student places. 3/ A continued moratorium on new awards would reduce the likelihood of new student places. If nonfederal support cannot be obtained, furthermore, some schools may become constrained in maintaining nursing programs with adequate facilities and equipment, since in the past a large share of construction funds have been used for improving outmoded facilities.

Grants for Institutions in Financial Distress. Financially troubled public or nonprofit schools of nursing may apply for funds to meet the costs of maintaining quality education or accreditation requirements. No awards have been made since fiscal year 1975 when 1 percent of all schools received this type of assistance. Because there has been a decrease in the number of nursing schools and programs since 1972, it is difficult to distinguish any impact that the discontinuation of financial distress assistance has had. The small number of schools that received an award in 1975 suggests that it may be slight.

Capitation Grants. Grants to schools of nursing based on the number of students enrolled were initially conceived in 1971 as incentives for nursing schools to train more nurses. As a condition for receipt of an award, participating schools now must either increase enrollments or undertake two of four projects. These projects are to establish or operate nurse practitioner programs, remote site clinical training programs in long-term or ambulatory settings, continuing education programs, or programs for the recruitment and retention of students of disadvantaged backgrounds. Each school must also maintain its enrollment and nonfederal expenditures at their previous year levels. The amounts of the awards are varied to reflect variations in educational costs per type of school. 4/

The size of the actual amounts awarded have fluctuated in the last several years, but in fiscal year 1977 each eligible school received 89 percent of its statutory authorization.

3/ These expenditures reflect prior-year awards.

4/ For full-time students, statutory authorizations are $400 for each third- or fourth-year baccalaureate student; $275 for each second-year associate student and $138 for each first-year associate student; and $250 for all diploma students.

Available funds indicate that fewer dollars per student will be awarded in fiscal year 1978. Since the total amount that a school receives depends on the type of nursing programs operated and the total enrollment of students eligible for capitation grants, awards to schools in fiscal year 1977 ranged from $2,500 to $504,000. Most (70 percent), however, were under $50,000.

Capitation awards provide basic operating support to nursing schools in a form that encourages them to increase the number of students enrolled. 5/ Nursing schools use this support predominantly to hire new faculty but also to enrich curriculums, purchase instructional equipment, and improve the overall quality of nursing education. From 1964 to 1969, before capitation awards were initiated, annual admissions to nursing programs increased by 17,700 students. From 1970 to 1975, however, the increase in admissions nearly doubled to 34,000 students. During this period, capitation awards directly stimulated enrollments because schools were required to increase enrollments in order to receive capitation and were provided bonuses for enrollment increases over the required expansion and for each graduating student. Since 1976, nursing school enrollments have been increasing, but at a decreasing rate.

5/ In addition, according to one investigation of nursing education and training in Colorado, Maryland, Michigan, Oregon, South Carolina, and Texas, capitation grants were perceived to thwart state planning efforts by enabling new associate degree programs to receive support when new programs were viewed as unnecessary. (These states did, however, concede that capitation grants had provided invaluable assistance several years ago in meeting critical nursing shortages.) Other negative effects created by capitation grants were described as unnecessary expansion of nursing programs (perhaps lowering the quality of education), acceptance and retention of academically marginal students in nursing programs, and delayed support for graduate nurse training programs. See Miller and Byrne, Inc., Evaluation of the Impact of PHS Programs On State Health Goals and Activities, Final Report, HEW, Health Resources Administration, Office of Planning, Evaluation and Legislation (May 1977).

Special Project Grants. Grants are available to public and nonprofit private schools of nursing and other entities for innovative projects that address national purposes in nursing. Eligible projects are those that:

- Facilitate mergers or other arrangements between hospital training programs and academic institutions leading to the establishment of nursing training programs;
- Develop new nursing training programs, including pediatric and geriatric nursing, or improve curriculums in existing schools;
- Increase nursing opportunities for disadvantaged individuals;
- Provide continuing education for nurses;
- Provide retraining opportunities for inactive nurses;
- Increase the supply or improve the distribution by geographic area or by specialty group of adequately trained nurses;
- Upgrade the skills of paraprofessional nursing personnel; and
- Develop short-term inservice training programs for nurse aides and orderlies for nursing homes.

Popular with nursing schools, these grants have been funded and awarded at close to statutory allowances and will total an estimated $15 million in fiscal year 1978. Of this total, 10 percent or $1.5 million must, by law, support projects to expand nursing school enrollment and retention of disadvantaged students.

Because of their diverse nature and the effects of other NTA programs, it is difficult to tell what effect the special project grants have had on the goals they are intended to address. There is evidence, however, that these grants fund innovative projects that schools would not otherwise undertake. In fiscal year 1977, 166 projects were supported, primarily for faculty and curriculum development and continuing education. Projects that support

minority recruitment and retention activities appear to be making progress towards increasing the number of minority and disadvantaged students in nursing. One study found, however, that the amount and type of financial aid available to students were the most important determinants of the success of a school's minority recruitment and retention efforts. 6/

Grants for Nurse-Practitioner Programs. Federal funding of nurse-practitioner programs is premised on the ability of nurse practitioners to provide effective and efficient medical services. Schools of nursing, medicine, and public health, as well as public and nonprofit hospitals, are eligible to receive grants or enter into contracts to develop, maintain, or expand nurse-practitioner programs, especially those providing training in primary health care and emphasizing geriatric nursing. In addition, special consideration is given to those programs that train RNs who live in areas designated by HEW as nurse shortage areas.

The availability of federal funds appears to have contributed to the expansion of nurse-practitioner programs since the first was established in 1965. From 1974 to the present, NTA funding of nurse-practitioner programs has increased fourfold to $13 million. At the same time, the total number of programs has grown 58 percent, from 133 to 210. Approximately 47 percent of these existing programs will receive NTA support in fiscal year 1978. Exactly how much federal funds contribute to the total costs of training nurse-practitioners is difficult to determine for two reasons. First, costs are not easily allocated to a nurse-practitioner program that is one of possibly several programs operated by a school of nursing. Secondly, when expenditures per student can be identified, they tend to vary widely between programs, by as much as 800 percent. Nevertheless, some sense of the magnitude of the federal contribution to nurse-practitioner programs is indicated in a 1976 study of over half of these programs, which showed that on average 68 percent of all available funds came from HEW. 7/

6/ Lawrence Johnson and Associates, An Assessment of Recruitment and Retention Activities in the Health Resources Administration's Special Health Career Opportunity Grants and Special Project Awards, (June 30, 1977).

7/ Not all of these funds, however, were from the Division of Nursing of HEW. See System Sciences, Inc., op cit.

Grants for Advanced Nursing Training. Federal funding of graduate nursing education is intended to accelerate the supply of nurses with master's and doctoral degrees in order to better prepare nurses to fill teaching, supervisory, and clinical positions. Public and nonprofit private collegiate schools of nursing are eligible for grants to develop, maintain, or expand graduate programs for professional nurses. Fiscal year 1978 appropriations of $12 million reflect a sixfold increase in federal help to graduate nursing programs since fiscal year 1976. With this level of funding, about 1,920 student places can be maintained, with awards averaging $125,000 per school.

Grants for Nursing Research. Nursing research grants support research projects on such topics as the management of pain, stress, death and dying; care of the elderly; and assistance to children and families in coping with hospitalization. In fiscal year 1978, $5 million will support 50 projects.

Student Assistance

Student assistance will total $47 million (or 37 percent of all NTA support) in fiscal year 1978. Federal aid is authorized for loans and scholarships to nursing students, loan repayments, traineeships for RNs pursuing graduate training, and fellowships for research training. The purpose of federal aid to nursing students is twofold: to ensure equality of educational opportunities to disadvantaged students who would not otherwise be able to pursue a nursing career and to assure nursing schools of an adequate supply of applicants. In very rough terms, NTA student-assistance dollars will account for 20 percent of the total tuition costs for students enrolled in basic, master's or doctoral RN programs or nurse-practitioner programs. 8/

8/ This estimate was calculated using very aggregated data and thus is somewhat imprecise because tuition charges vary widely among schools. Furthermore, it is somewhat understated in that it excludes student support funded through institutional awards to nurse-practitioner programs which is difficult to separate from nurse-practitioner institutional support. Total tuition costs were calculated by multiplying enrollment estimates for each type of nursing program disaggregated into public or private control by the average tuition in 1976-77 for each type of program by public or

Nursing Student Loans. Low interest loans of up to $2,500 annually or a total of $10,000, repayable over 10 years, are available to both full- and part-time nursing students. Nursing student loans will make up about $22.5 million, or 18 percent, of Nurse Training Act expenditures in fiscal year 1978. Available funds are less than one-fourth of those requested by nursing schools. Thus, only about 28,000 students, or 11 percent of all students enrolled in basic RN programs, receive NTA loans averaging $800 per student annually.

The availability of NTA loans may provide access to a nursing education for those who otherwise could not afford to attend or who cannot obtain loans from other sources. The most recent data from 1974 suggest that NTA loans have been helpful to disadvantaged students, although the demand for loans is much greater than the available funds. Sixty-six percent of 1974 NTA loan recipients were from families with incomes of less than $10,000. Of these recipients, 20 percent were black and 5 percent were other minorities. Partly because the large differences in costs of attending nursing schools, it is difficult to judge the adequacy of awarded loans. Nursing school tuitions in 1976-77, on average, ranged from $348 for public associate degree programs to $2,323 for private baccalaureate degree programs.

Loan Repayment. Although financial incentives have been built into the nursing student loan program in order to encourage nurses to locate in facilities and geographic areas that tend to have difficulty attracting RNs, they appear to be ineffective. Up to 85 percent of NTA loans may be cancelled for recipients employed in a nonprofit facility and up to 85 percent of all outstanding educational loans plus interest may be "forgiven" or repayed by the Secretary of HEW for services in nurse shortage areas. The major underlying reasons for low participation may

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8/ private control. Average tuition costs for basic RN programs were obtained from HEW. Tuition for master's and doctoral programs was assumed to be similar to that for baccalaureate programs. Finally, tuition costs for nurse-practitioner programs were obtained from Harry A. Sultz, Maria Zielesny, and Louis Kinyon, HEW, Health Resources Administration, Bureau of Health Manpower, Division of Nursing, Longitudinal Study of Nurse Practitioners, Phase 1, (March 1976).

be the small average debt incurred in relation to future earnings, a lack of knowledge about the loan forgiveness option, and an unwillingness of nurses to locate in some of the more isolated areas designated for loan forgiveness. A survey of registered nurses who graduated in 1973 indicated that loan forgiveness had no discernable effect on choice of hospital employer. Of nurses employed in loan forgiveness (public or nonprofit) hospitals in shortage areas, 21 percent had debts eligible for repayment (all educational loans). Only 15 percent of nurses in loan forgiveness hospitals in other areas had debts eligible for repayment (only NTA loans). In proprietary hospitals, however, 31 percent had debts that would have been eligible for repayment if the nurse were employed in a loan forgiveness hospital. 9/

Nursing Student Scholarships NTA scholarships--a maximum of $2,000 annually--are available to exceptionally needy students. As with NTA loans, it appears that disadvantaged students benefited from NTA scholarships even before they became available only to the very needy. Averaging $1,000 per recipient annually, fiscal year 1978 appropriations provided scholarships for 9,000 students, or about 4 percent of all students enrolled in basic RN programs. In fiscal year 1974, 79 percent of scholarships awarded went to students from families with incomes of less than $10,000. Of these students, 21 percent were black and 5 percent were other minorities.

The availability of NTA loans and scholarships may have been a major reason for minority enrollment increases in nursing schools. The number of blacks enrolled in RN programs began to increase dramatically after the enactment of the Nurse Training Act of 1964, which first provided for nursing scholarships and loans. From 1965 to 1971, black enrollments increased about 2,000 students each year compared to an annual increase of about 400 from 1962 to 1965. 10/

9/ Frank Sloan, The Geographic Distribution of Nurses and Public Policy, HEW, Health Resources Administration, Bureau of Health Manpower, Division of Nursing (May 1976).

10/ A similar increase might be expected for other minorities, but no data on these groups were available before 1972.

Traineeships and Fellowships. Federal stipends have been available to RNs enrolled in graduate programs of nursing since 1956. In fiscal year 1978, $14 million will be available to support 3,000 students, or over 30 percent of all full-time students enrolled in a master's, doctoral, or nurse-practitioner program and a small number of RNs engaged in research. Graduate nursing students appear to rely heavily on federal financial assistance particularly in order to pursue study full time. A decline over the years in the proportion of students receiving traineeships coincides with a downward trend in the proportion of full-time students enrolled. The full-time enrollment proportion was at a low of 55 percent in 1976.

OTHER DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE PROGRAMS THAT SUPPORT NURSING EDUCATION AND TRAINING

In addition to NTA funded programs, a number of other HEW programs exist that assist nursing schools and students. Chief among these are programs administered by various divisions within the Health Resources Administration (HRA), the Alcohol, Drug Abuse, and Mental Health Administration (ADAMHA), and the Health Services Administration (HSA). These programs offer scholarships to nursing students in order to train specific types of nurses, staff federal facilities, or place nurses in underserved areas. Together these programs contributed about $13 million for nursing education and training in fiscal year 1977 (see Table 8). 11/ In addition, the Office of Education provides federal educational loans and grants to financially needy students seeking post-secondary education.

Of the two scholarship programs administered by HRA, one will be discontinued and the other expanded in fiscal year 1978. Together, these programs cost slightly over $1 million in fiscal year 1977. The discontinued program is a public health traineeship program that supported 77 nursing students in fiscal year 1977. The second source of scholarship support is the National Health Service Corps Scholarships (NHSC) program--a major initiative to place health professionals in underserved communities. Most of these scholarships, 90 percent, are designated for medical and dental students; hence, only a limited number support

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11/ Fiscal year 1978 allocations for nursing training are not yet available.

TABLE 8. FEDERAL EXPENDITURES FOR NURSING EDUCATION AND TRAINING AND NUMBER OF STUDENTS SUPPORTED, FISCAL YEAR 1977

Agency	Number of Students a/ Undergraduate	Graduate	Total Expenditures
HEW, Total	34,527	4,992	126,317,000
Public Health Service			
Health Resources Administration	34,355	3,894	114,724,000 b/
Alcohol, Drug Abuse, and Mental Health Administration	154	809	8,481,000 c/
Health Services Administration	18 d/	289	3,129,000 e/
Office of Education	f/	f/	f/
Veterans Administration	23	0	164,000
Department of Defense, Total	315	74	698,000
Army	225	74	482,000
Navy	90 g/	0	216,000
Total	34,865	5,066	127,199,000

SOURCES: Figures compiled by various divisions within the Health Resources; Alcohol, Drug Abuse, and Mental Health; and Health Services Administrations of HEW; the Division of Medicine and Surgery of the Veterans Administration; and the Office of the Assistant Secretary of Defense for Health Affairs of the Department of Defense.

Footnotes on page 48

TABLE 8. (footnotes)

a/ These figures represent only the number of students who are enrolled in degree-granting programs and are supported directly through scholarships, traineeships, stipends, loans, or fellowships; excluded are students supported indirectly through general institutional grants to nursing schools.

b/ This includes $113,700,000 in NTA funds, an estimated $693,000 $693,000, for NHSC scholarships and $331,000 for public health traineeships.

c/ This includes $339,244 for mental health training and $142,000 for alcohol abuse training.

d/ This includes $2,912,000 for maternal and child health training and an estimated $217,000 for the Public Health Service Commissioned Corps.

e/ Estimated at eight students supported for the entire year, plus 60 students supported an average of two months for a full-time equivalent of 18 students.

f/ Not available.

g/ May include some graduate students.

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nursing students. In fiscal year 1977, 77 nursing students received scholarships. This number is expected to be expanded to 160, or about 3 percent of all NHSC scholarships in fiscal year 1978.

ADAMHA sponsors one of the oldest federal training programs for nurses. In fiscal year 1977, over $8 million was awarded to schools and students, predominantly for psychiatric nursing training; 963 undergraduate and graduate nursing students received stipends. Additionally, there was institutional and student support for nursing training in problems related to alcohol abuse.

Supporting fewer students than ADAMHA, HSA spent nearly $4 million to train nurses in fiscal year 1977. Almost all of the funds went to nursing schools and students for graduate training in maternal and child health. The remainder supported a program designed to furnish nursing staff for Public Health Service (PHS) facilities. As members of the Commissioned Corps of the Public Health Service, senior baccalaureate nursing students are provided the costs of tuition and fees as well as a salary in return for a minimum of two years of service in PHS facilities. In fiscal year 1977, eight students received full-time support and 60 students were supported for short, inservice training.

The Office of Education administers the Guaranteed Student Loan (GSL), the Basic and Supplemental Educational Opportunity Grants (BEOG/SEOG), the National Direct Student Loan (NDSL), and college work-study programs that are intended to provide equality of educational opportunity for all students. These programs tend to be based on need and as such serve primarily lower-income students. As part of the larger student group, nursing students are eligible to receive federal assistance under these programs. 12/ The current proportion of these loans and grants awarded to nursing students is unknown. 13/

12/ If a nursing student's school participates in the NTA loan program (the vast majority do so), then that student is not eligible for an NDSL.

13/ A survey of nursing students in 1969-70 indicated that 12 percent of all nursing students received NTA loans, 3 percent NDSLs, 5 percent GSLs, and 9 percent other loans. Of all loan dollars awarded, NTA loans were 36 percent, NDSLs were 7 percent, and GSLs were 23 percent. The remaining 34 percent were from state and private sources. BEOGs were not operational at that time. See Hani R. Saigh, A Study of Student Finance in Nursing Education: An Analysis of the Results of A Student Survey Conducted in 1969-1970, prepared by the National League of Nursing for HEW, Health Resources Administration, Bureau of Health Manpower, Division of Nursing (December 1970).

OTHER FEDERAL PROGRAMS THAT SUPPORT NURSING EDUCATION AND TRAINING

Two other federal agencies, the Veterans Administration (VA) and the Department of Defense (DoD), support nursing education and training to some degree, primarily to staff their own facilities. It is significant that, at present, neither rely extensively on the scholarship-for-service mechanism to obtain nurses. This may be because of the existence of both an adequate national supply of nurses and attractive nursing career opportunities with these agencies.

The Veterans Administration provides stipends for a small number of nursing students in return for a service obligation. More significantly, it provides clinical training opportunities in VA facilities for about one-fourth of all nursing students. In addition, VA hospitals have been especially innovative in their use of nurse practitioners, possibly because of some difficulty in attracting physicians.

About two years ago, DoD discontinued its policy of offering scholarships to nursing students in return for service. It found that RNs, except those with graduate training, could be successfully recruited without scholarship incentives. DoD does support baccalaureate training for diploma and associate degree RNs already in the military in return for additional service. Similarly, baccalaureate nurses already in the service may receive support for advanced clinical or graduate training. In fiscal year 1977, about $1.7 million was spent for these purposes. The majority of RNs received training at the Walter Reed Army Institute of Nursing.

SUMMARY

Federal programs that attempt to increase the aggregate supply of RNs, to improve the quality of nursing education and practice, and expand the supply of minority RNs appear to have been successful. Annual additions to the aggregate RN supply are higher than ever before. The quality of nursing schools has improved, as evidenced by the increase in national accreditation of nursing schools from 67 percent of diploma, 5 percent of associate, and 70 percent of baccalaureate programs in 1964 to 90, 46, and 80 percent, respectively, in 1977. The availbility of federal funding, particularly institutional support,

has stimulated increases in the nurse-practitioner supply. Similarly, the availability of federal funding, particularly student support, has stimulated increases in the supply of nurses with graduate training. Although now leveling off, minority representation in basic RN programs appears to have been directly stimulated by NTA loans and scholarships and by other minority recruiting projects supported by NTA funds.

So far, federal programs have been weak, or ineffective, in alleviating the geographic maldistribution of nurses. They have relied on increasing the overall supply of nurses and nurse practitioners to reduce shortages. A strategy of loan forgiveness for service in shortage areas has not been successful even though it has been in effect since 1968 in various forms. Furthermore, the practice of encouraging nursing schools to develop clinical training opportunities in remote facilities has not been fully exploited. Remote site training projects that would encourage nurses to locate in rural areas, after having served a preceptorship there, were undertaken by only 18 percent of the schools that received a capitation award in fiscal year 1977. The majority elected to increase enrollments. The unsatisfied demand for RNs in some areas, despite an increase in the absolute number of RNs available, suggests that additional measures to encourage nurses to locate in these areas are necessary. The impact of current federal programs on federal nursing education and training goals is summarized in Table 9.

TABLE 9. SUMMARY OF MAJOR IMPACTS OF NURSE TRAINING ACT PROGRAMS ON NURSING EDUCATION AND TRAINING

Program	Policy Goals: Ensure Adequate RN Supply	Improve Geographic Distribution	Expand RN Supply with Advanced Training	Improve Access for Minorities	Improve Quality of Nursing Education and Practice
Institutional Assistance					
Construction	Yes	No	No	Indirectly by maintaining or creating new places	Partially - helps schools to maintain quality programs
Financial Distress	Partially - helps schools to maintain student places	No	No	Indirectly by maintaining places	Partially - helps schools to maintain quality programs
Capitation	Yes	No	No	Indirectly by maintaining or creating new places	Partially - helps schools to maintain quality programs
Special Projects	No	To the extent that these types of projects are undertaken	No	Yes	Yes
Nurse Practitioners	No	Yes	Yes	Indirectly by maintaining or creating new places	Yes - if nurse practitioners provide better care than other nurses
Advanced Nursing Training	No	No	Yes	Indirectly by maintaining or	Yes - if graduate degree nurses

(continued)

TABLE 9. (continued)

Program	Policy Goals				
	Ensure Adequate RN Supply	Improve Geographic Distribution	Expand RN Supply with Advanced Training	Improve Access for Minorities	Improve Quality of Nursing Education and Practice
Student Assistance					
Loans and Scholarships	Ensures an adequate supply of applicants	To the extent that recipients will locate in underserved areas	To the extent that RNs enrolled in nurse practitioner or graduate degree programs receive loans	Yes	No
Loan Repayment	No	Not significantly	No	To the extent that recipients are willing to serve in underserved areas	No
Traineeships and Fellowships	No	To the extent that nurse practitioners receive traineeships	Ensures an adequate supply of applicants	Yes	Ensures an adequate supply of applicants to nurse practitioner and graduate nursing programs

CHAPTER V. ALTERNATIVE FEDERAL APPROACHES

Altered federal policies for nursing education and training may be needed because visible improvements have been achieved in many areas since federal support was initiated. These improvements include increased availability of RNs, greater RN staffing ratios in hospitals, more minority nurses, and more accredited nursing schools. Most evidence suggests that federal assistance to accelerate increases in the aggregate supply of nurses is no longer necessary to ensure an adequate supply. There is, however, uncertainty regarding the future role of nurses in a changing health care system and the quality of nursing education and practice. This uncertainty, along with continuing unmet demand for specific types of nurses and for nurses in rural and inner city facilities, creates disagreement among those concerned about which objectives should be furthered by future federal financing of nursing education and training.

The first part of this chapter includes a discussion of possible ways to modify current policies in order to better address three policy goals:

- Improvement of the geographic distribution of RNs;
- Greater availability of nurses with advanced training; and
- Expansion of minority group enrollment in nursing schools.

Strategies that address all goals, but with different effects and budget levels, can also be devised by combining different programmatic options. Two strategies are described and assessed as alternatives to current policy in the second part of this chapter. The first alternative strategy is the Administration's funding recommendations for federal aid to nursing schools and students in fiscal year 1979. The second strategy would be more expensive and more comprehensive in its effects than the Administration's proposal, but slightly less expensive and more targeted to the three policy goals than current policy.

OPTIONS TO IMPROVE THE GEOGRAPHIC DISTRIBUTION OF REGISTERED NURSES

Nurses can be encouraged to practice in areas with relatively few RNs—predominantly southern states, rural communities, and inner city neighborhoods--through the educational or employment process. Policy instruments can be designed to influence RN location decisions by providing incentives to nursing schools and nursing students, or by stimulating demand for nurses by employers. Various options are discussed below.

Options That Involve Nursing Schools

Despite the considerable mobility of RNs from one area to another, federal funds channeled to selected nursing schools may be somewhat effective in influencing the geographic distribution of nurses, because nurses are more likely to practice in areas in which they are trained. For instance, there could be a relatively good return on institutional assistance available only to nursing schools in shortage area states. 1/ About 60 percent of the graduates of these schools could be expected to practice in the same state at least four to eight years after graduation. 2/ A simple, low cost measure, possibly requiring less than $1 million in federal funds over several years, would be to provide interest subsidies and loan guarantees to upgrade teaching facilities of these schools—about 21 percent of all nursing schools. They would then more easily be assured of loans to maintain facilities, resulting in a continuation of enrollment capacities.

1/ Shortage area states could be those with a large proportion of its counties designated as nurse shortage counties. See those listed on page 16.

2/ Sloan, op cit. Sloan concludes, however, that it would not be a good investment to locate new nursing schools in nursing shortage areas simply to increase the supply of nurses in these areas. He found that, although nurses generally take their first jobs in the same geographic area of training, methods must be devised to retain them.

A more effective, but more costly, measure would be to provide capitation grants to shortage area schools, contingent on the development of projects such as continuing education, remote-site training, and recruitment of students from local areas, to encourage graduates to remain in surrounding communities. If capitation grants were fully funded, about $10 million would be required in fiscal year 1979. 3/ There could be substantial opposition, however, from other nursing schools--the vast majority of all schools--to preferential treatment for shortage area schools. If so, an alternative, close to current policy, would be to make capitation grants available to all schools, but in exchange mandate that each school undertake projects to improve geographic distribution of RNs. If fully funded, this would add another $38 million to the costs of providing capitation grants solely to shortage area schools for a total cost of $48 million. Grants provided in this form, however, would encourage enrollment expansion in these schools that could be undesirable if graduates eventually moved to areas with an adequate supply of nurses. Alternatively, special project funds could be made available to all schools, as under current policy, but eligible projects restricted to those that would address distributional objectives.

Greater effectiveness in improving the availability of RNs in rural and inner-city areas could be achieved by requiring all nurse-practitioner programs that receive federal support to establish a mechanism to place graduates in these locations. No change in funding from the current policy level of $14 million in fiscal year 1979 would be required. Because in most cases nurse practitioners are employed by physicians, efforts to increase the supply of nurse practitioners should also be combined with efforts to strengthen demand for their services.

Options That Involve Nursing Students

Modifications in loan repayment options and National Health Service Corps (NHSC) scholarships could increase the incentives to nursing students to locate in underserved areas. One change

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3/ Fully funded capitation grants would provide $400 for each third- and fourth-year baccalaureate, $275 for each second-year and $138 for each first-year associate, and $250 for each diploma full-time student.

would be to continue to cancel repayments of educational loans for students who serve in designated shortage areas, but eliminate the NTA loan cancellation option for employment in any nonprofit facilities. Hence, many more nurses might choose to serve in shortage areas to pay off educational debts, especially with rising educational costs. The costs of loan repayment are somewhat unpredictable, depending on the number of students using the cancellation provison and the size of the loans to be repayed. If 5,100 RNs --6 percent of the total expected number of nursing school graduates in fiscal year 1979 and the number of RNs calculated by HEW needed to eliminate shortages in designated shortage areas--opted to serve in shortage areas in order to reduce educational debts, then $10 million might be required over a three-year period, with costs of nearly $4 million in the first year. 4/

A second modification would be to increase greatly the number of scholarships offered to nursing students in exchange for a minimum of two years of service in the National Health Service Corps. This would increase the likelihood that communities in need of nurses would get them, but at a significantly greater cost than the loan repayment cancellation options. Scholarships that include tuition, fees, and living expenses have been popular with medical students and might be as attractive to nursing students, especially those in high-cost schools. In order to provide scholarships for 5,100 nursing students, roughly $36 million the first year and up to $108 million over a three-year period would be required, depending on the mix among the types of nursing students receiving scholarships. 5/ One problem would be how to encourage RNs to remain in these communities

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4/ Costs were calculated using the average debt at graduation for a nursing student in 1973, adjusted for inflation to approximate current levels. It was also assumed that, as under current law, 60 percent of each loan would be repayed for the first two years of service and 25 percent for the third year.

5/ This assumes that scholarships average $7,000 a year for each recipient and that all students enrolled in diploma programs, only second-year students in associate programs, and third- and fourth-year students in baccalaureate programs would be eligible.

after serving out the obligated minimum period. This problem could be addressed by carefully selecting and matching scholarship recipients to their assigned communities.

Options That Involve Employers

More nurses could be attracted to serve in rural and inner-city areas by changing the features of employment in those areas that are unattractive to RNs and by creating employment opportunities where they are lacking. Special project grants could be targeted for health care facilities in designated shortage areas to recruit RNs, to subsidize salaries, and to design programs to encourage inactive RNs to reenter practice, such as establishing orientation programs, day care centers and continuing education programs. Although effective, this option would be very expensive if, in order to attract RNs from other areas, their salaries would have to be substantially above those paid to RNs already employed in the institution. The already employed RNs would likely receive salary increases, too, resulting in a windfall for them and much greater costs overall.

By raising the demand for nurse practitioners--the type of RN most likely to locate in shortage areas--shortages of medical and nursing providers could also be reduced. One way to accomplish this would be to create incentives for physicians to hire nurse practitioners. 6/ While medicare and medicaid reimbursement is now provided to rural health clinics for nurse-practitioner services, it might also be provided to physicians who employ nurse practitioners in shortage areas. Thus, an economic disincentive to hire nurse practitioners would be eliminated and physician productivity would be increased in the areas where providers are most needed. 7/ If every active physician in

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6/ Studies have shown that physicians, for ambiguous reasons, tend to employ fewer aides, not necessarily nurse practitioners, than would be profitable. For a detailed discussion, see Uwe Reinhardt, "National Health Insurance: Its Potential Impact on the Use of Non-physician Health Manpower" (paper prepared for HEW, Health Resources Administration, January 1975).

7/ Designated nurse shortage areas tend to be part of larger medically underserved areas.

an office-based practice in a shortage area county hired at least one nurse practitioner, nearly 3,000 new nurse practitioners would be practicing in these areas.

Because the geographic maldistribution applies not only to nurses, but also to other health care providers with whom nurses usually work, broader remedies to alleviate nursing shortages in many communities might produce better results than simple incentives to nursing students, schools, and employers. For some isolated communities, employment opportunities along with methods to reduce professional isolation--such as developing satellite health care clinics with connecting networks to more distant, sophisticated facilities in more urbanized areas--might be most effective. Some attention has already been given to this solution with federal funding of Area Health Education Centers and primary health care centers. 8/ Greater efforts, such as the Administration's proposed funding in fiscal year 1979 of 131 new community health centers, might be required.

OPTIONS TO IMPROVE THE AVAILABILITY OF REGISTERED NURSES WITH ADVANCED TRAINING

Capitation grants for all graduate or nurse-practitioner programs might successfully accelerate the supply of RNs prepared for teaching, supervision, research, and advanced clinical practice. Formula grants for these programs, based on student enrollments and requiring increases in enrollments would provide operating support and at the same time encourage program expansion. Nurse-practitioner schools, in particular, would be encouraged to expand since proportionally fewer are currently receiving federal assistance than graduate programs. Successful at increasing enrollments in basic RN programs in the past, the capitation grant formula for advanced nursing programs would have to be set at a level high enough to provide current policy levels of support and provide sufficient incentives for schools to expand enrollments in graduate and nurse-practitioner programs. Fiscal year 1979 costs might be on the order of $14 million for full-time students enrolled in master's and doctoral

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8/ Area Health Education Centers attempt to decentralize the resources and health manpower training programs of health science centers into community hospitals and local institutions in rural and medically underserved areas.

programs and $3.5 million for full-time students enrolled in nurse-practitioner programs if capitation grants were set at $1,500 for each student. Alternatively, bonuses for each graduate, instead of grants formulated on enrollments, could be initiated. Thus, schools would have an incentive to retain students rather than simply enroll them. Both options, however, would have to be combined with institutional support for new or developing schools that have very high initial costs per student.

OPTIONS TO EXPAND THE SUPPLY OF MINORITY REGISTERED NURSES

Minority recruiting activities and special help to academically disadvantaged students tend to be costly activities which nursing schools might expand if provided funding. Generous financial assistance through special project grants for a variety of purposes is now awarded to nursing schools, but could be restricted to minority recruitment and retention activities, including paying stipends to students. Alternatively, capitation grants could be a mechanism to encourage all schools to step up affirmative action efforts by requiring schools to undertake such activities in order to receive capitation grants. To be most effective, a prohibition in current law against using capitation grants for student assistance would have to be eliminated, or capitation could be coupled with direct student support for minorities. An even stronger measure would be to require schools to develop progressive goals for minority student representation and work toward those goals as a condition for receiving capitation awards or even all federal funding. This quid pro quo, however, would probably meet with some resistance from nursing schools, given current disagreement about the equity of affirmative action. Again, if capitation grants, rather than all federal funds, were used as motivation, they would have to be set high enough to provide a sufficient incentive for schools to apply for funds. If fully funded, costs would be $48 million in fiscal year 1979.

Direct scholarship support is now provided to a limited number of needy students, but could be expanded to assist a greater number of students. Alternatively, scholarships could be enlarged to meet more adequately the costs of a nursing education, thus reducing the possibilities of minority dropouts because of financial problems. An advantage of providing student assistance that is not incorporated into institutional grants

for minority recruitment is that nearly all nursing schools participate in the NTA scholarship program for very needy students, but might not participate in a special project or capitation grant program for minority recruiting. Hence, the choice of schools for financially needy students would be wider.

FEDERAL STRATEGIES TO ACHIEVE POLICY GOALS

Two examples of legislative and funding strategies that combine selected options for nursing education and training--one constrained in its approach and the other more comprehensive--are presented below.

The Administration's Position: National Resources in Nursing Now Sufficient

This approach presumes that federal funding is no longer necessary to ensure sustained growth in the aggregate supply of nurses and that other national needs in nursing can be met by funding of nurse-practitioner programs and special projects (see Table 11 on page 71). Almost 95 percent of all NTA support of nursing education and training would be terminated--at the risk, however, of a substantial decrease in the expected supply of RNs and a large drop in RNs expected to receive graduate training. Specifically, this option would:

- Extend legislative authority for all nurse-practitioner programs and special projects through fiscal year 1980. 9/ Legislative authority for all other NTA programs would expire.

- Provide budget authority slightly below current policy levels for nurse-practitioner programs and almost one-half of current policy levels for special projects, or a

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9/ Since the authorizing legislation for federal support for other health professions expires at the end of fiscal year 1980, nursing training programs could again be reviewed, but in conjunction with other health manpower programs.

total of $20.5 million for fiscal year 1979. 10/ Savings of $109.4 million would be acheived over current policy.

This strategy emphasizes expanding the supply of nurses with advanced training who can perform in expanded roles. Current policy support of nurse practitioners is probably critical for a continuation of trends in the supply of these practitioners. Further increases in the supply of nurse practitioners might also improve the geographic distribution of RNs. Additionally, the targeting of any new special projects funded through NTA funds to address either geographic maldistribution problems or the recruitment and retention of minorities would stimulate nursing school activity in both of these areas.

Equally important are the possible outcomes of proposed reductions in basic assistance to nursing schools and elimination of NTA loans and scholarships to nursing students. Whether the future adequacy of the nursing supply would be affected depends primarily on how successful nursing schools and students were at replacing NTA funds with revenues from other sources. If schools were moderately successful, there is evidence that the adequacy of future supplies of nurses would not be seriously endangered. Conversely, if nursing schools were not at all successful, a significant decline in the number of nurses available for employment might be expected. Similarly, if NTA loans and scholarships were not supplanted by other types of financial aid, a change in mix of students or concentration of lower-income students in the less expensive associate programs might be expected.

The impact of the discontinuation of capitation grants on the supply of and demand for RNs in 1990 was analyzed by Pugh-Roberts Associates. The results of one simulation, which assumed that the discontinuation of capitation had a moderate effect on nursing schools, indicate that the long-term effects of minimal federal assistance might be a 3 percent decrease in the supply of RNs available for employment and virtually no change in demand for RNs by 1990 below what might be expected with a continuation

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10/ If funding were maintained at fiscal year 1979 policy levels in fiscal year 1980, $21.7 million in budget authority would be required.

of current levels of support. 11/ The initial impact of loss of capitation support was assumed to be equal to the fraction of the total cost of each student that is covered by capitation payments. Most affected was enrollment in diploma programs, declining 14 percent below enrollment levels that might be expected if capitation were continued. Enrollment levels in associate and baccalaureate schools was estimated to decline 4 and 9 percent, respectively. The ultimate supply of RNs available for employment was predicted to drop less sharply than enrollments because of a rise in the number of inactive RNs who would become employed.

On the other hand, if the survival of a number of nursing schools were endangered because they could not find alternative funding, the loss of capitation might create an 11 percent decrease in the supply of RNs available for employment by 1990, along with a 4 percent decrease in demand for RNs. A decline of 81, 2, and 27 percent in projected enrollments in diploma, associate, and baccalaureate programs, respectively, could occur. This situation would be most plausible for schools that receive large special project awards as well as capitation grants and thus would have to replace larger sums of money.

Despite the response to a survey of baccalaureate schools that indicated that loss of federal funding would necessitate a median 14 percent drop in enrollments in baccalaureate programs, schools might make several responses to compensate for lost capitation revenues. 12/ One way would be to increase

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11/ Capitation grants were assumed to be eliminated in 1974. Tom Bergan and Gary Hirsch, Pugh-Roberts, Inc., Effects of Changes in Nursing Licensure and Assistance to Nursing Education: A Policy Paper, (unpublished, September 27, 1976).

12/ Survey of member schools of the American Association of Colleges of Nursing (AACN). Responses were received from 135 accredited baccalaureate schools of nursing, or 41 percent of all baccalaureate schools of nursing. Since only members of the AACN were surveyed, the results are not necessarily representative of all schools of nursing. See Linda K. Amos, Summary Analysis of the Survey of Needs and Resources in Schools of Nursing (unpublished paper prepared for the American Association of Colleges of Nursing, February 24, 1978).

tuition charges. As a result, the annual tuition charge per student would increase about $223 for diploma programs, no more than $245 for associate programs, and by as much as $357 for baccalaureate programs. Tuition increases of this magnitude would most affect students in associate nursing programs. About 64 percent of all associate degree programs would have to increase tuition charges by more than 50 percent, compared to 3 percent of diploma and 36 percent of baccalaureate programs (see Table 10).

State-supported institutions, however, could encounter difficulty in raising tuition levels controlled by state legislatures and might appeal for additional state support. Although private institutions are more free to raise tuitions, they too might appeal for more public funds. As a result, states might gain greater control over the planning of new and the expansion of existing nursing programs. Lastly, nursing schools (which are less restricted by equipment and lab space requirements than medical and dental schools) could also attempt to increase student-faculty ratios in order to make up for federal cutbacks. While increases in class size could mean a dilution of the quality of some nursing educational programs, loss of capitation grants might not necessarily lead to reductions in the aggregate supply of nurses.

If nursing schools shifted more educational costs to students to compensate for discontinued federal funding, the availability of student aid could become a major determinant of the mix of nursing students and, to some degree, the extent to which enrollments might decline. In general, it is likely that the broader federal student aid programs (GSLs, BEOG/SEOGs, and NDSLs), if expanded, could accommodate the relatively small number of students who would have received an NTA loan or scholarship and the greater demand for financial aid from other students created by rising tuition charges. Such expansions are proposed in the fiscal year 1979 budget. Nursing students, however, would have to compete with a larger pool of students. If loans rather than grants or scholarships were more available, lower-income students might be discouraged from attending school by the prospects of repayment of large educational debts. An additional unanswered question is whether very needy students--many of whom already receive aid from a combination of sources--would be adequately served by the remaining loan and grant programs which have borrowing limits. If not, these students

TABLE 10. POTENTIAL PERCENT INCREASE IN TUITION CHARGES THAT WOULD RESULT FROM LOSS OF CAPITATION GRANTS a/: NUMBER AND PERCENT OF SCHOOLS

Program	24 or Less		25-50		51-75		76-100		Over 100		Total	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Baccalaureate	155	45	65	19	61	18	26	8	34	10	341	100
Associate	77	12	157	25	181	28	89	14	138	22	642	100
Diploma	316	81	64	16	8	2	0	0	3	1	390	100

SOURCES: Derived from data from Baccalaureate Education in Nursing: A Key to a Professional Career in Nursing 1976-77 (New York: National League for Nursing, 1976); Associate Degree Education for Nursing 1976-77 (National League for Nursing, 1977); and Education for Nursing - The Diploma Way 1976-77 (National League for Nursing, 1976).

a/ In order to use available data, several assumptions were necessary. These assumptions may create an upward bias in the estimated percent increases that would be necessary to compensate for the loss of federal funds if capitation grants were eliminated in fiscal year 1979. First, the tuition charge for a nursing program was assumed to increase by an amount equal to the per student capitation grant allocation for that program in fiscal year 1978. Thus, to the extent that a nursing school could secure funding from other sources, tuition charges might not increase as much. Secondly, current tuition levels were assumed to be the same as academic year 1976-1977 charges. If tuition increases have occurred since then, the potential increase in charges resulting from loss of capitation grants would be less. Further, state resident charges were assumed to apply to all students enrolled in state-approved schools. Since nonresidents enrolled in these schools usually pay higher tuition charges, potential increases resulting from termination of capitation funding may be slightly overstated. Lastly, tuition charges for nursing schools accredited by the National League of Nursing were used. Data for nonaccredited institutions were not available. There is, however, little reason to believe that tuition charges at nonaccredited schools would differ significantly from those at accredited schools. If a difference does exist, the impact of the loss of capitation funding portrayed in the table for associate programs would be most affected since less than half of these programs are accredited. Least changed would be the effect on baccalaureate and diploma programs since the majority of these schools are accredited.

would be forced to attend the less expensive associate degree programs at the same time that employment prospects for associate nurses are becoming unfavorable.

For graduate nursing programs, loss of advanced nurse training grants might have a severe effect on enrollments and, consequently, on the future supply of nurses with advanced training. For schools responding to the AACN survey, the median amount received for each full-time equivalent student enrolled in a master's or doctoral program averaged $1,280. Loss of funding reportedly would cause a 54 percent drop in enrollment in master's programs and a 37 percent drop in enrollments in doctoral programs. Simulations using the Pugh-Roberts model indicated that such enrollment decreases would result in 28 percent or about 22,000 fewer RNs with advanced training by 1990 than would be expected if federal funding were continued. In at least six states, and perhaps more, the prospects for increased state support of graduate nurse training to make up for federal cutbacks do not appear to be good. 13/ Moreover, even with the unlikely prospect that schools could adequately compensate by raising tuition, elimination of federal traineeships for students in graduate programs would markedly reduce the number of students financially able to attend.

Any financial difficulties that nursing schools or students might suffer as a result of the termination of most federal institutional support could be minimized by altering the Administration's proposals. One way would be to provide financial distress grants to schools suffering financial hardships. Another way would be to retain the specific and targeted support of nurse-practitioner programs and special projects, but terminate capitation grants, nursing student loans, scholarships and traineeships over a period of two to three years and institutional assistance for master's and doctoral nursing programs over a period of three to five years. As a result, current levels of federal support would be reduced, yet nursing schools and students would have more time to find alternative sources of aid.

13/ Miller and Byrne, Inc., Evaluation of the Impact of PHS Programs On State Health Goals and Activities, HEW, Office of Planning, Evaluation and Legislation (May 1977).

Modified Current Policy: Further Development of Nursing Resources Needed

For observers who believe that existing needs in nursing are greater than can be met by the Administration's proposals, a more varied package of options might be desirable. This approach would do more to achieve policy goals by ample, but less than current policy, federal support to nursing schools and students (see Table 11 on page 71). In order to receive funds, however, nursing schools would have to fulfill certain requirements. Specifically, this strategy would:

- Extend legislative authority for loan guarantees and interest subsidies for upgrading teaching facilities in shortage area states (budget authority of $1 million). 14/

- Restructure legislative authority for special project grants, limiting eligible projects to those that improve by specialty or geographic area the distribution of RNs or focus on minority recruitment and retention (budget authority of $50 million).

- Maintain legislative authority for institutional funding for master's, doctoral, and nurse-practitioner programs (budget authority of $27 million).

- Create new legislative authority for bonuses of $1,500 for each additional graduate over a base number of annual graduates from a practitioner program (budget authority of $3 million).

- Extend legislative authority for traineeships for master's, doctoral and nurse-practitioner students (budget authority of $14 million).

- Retain legislative authority for scholarships for exceptionally needy students (budget authority of $14 million).

14/ A two-year extention is assumed for all legislative authority. Budget authority is for fiscal year 1979.

- Restructure legislative authority for loan repayment and cancellation by extending repayment for all educational loans for shortage area service, but terminate loan cancellation for employment in a nonprofit institution (budget authority of $2 million).

- Total budget authority of $111 million would be required in fiscal year 1979, or $19 million below current policy. 15/

Institutional funds would be available to basic RN schools without encouraging enrollment expansion by replacing capitation grants with expanded special project awards and limiting construction assistance to loan guarantees and interest subsidies for shortage area schools. Tuition increases caused by loss of capitation grants in order to retain current levels of federal support would be minimized. Furthermore, nearly all schools would be encouraged to develop projects actively to increase minority enrollments or improve distributional problems. These projects could be interpreted broadly to include paying stipends to nursing students from shortage areas, developing continuing education programs for nurses in shortage areas, or remote site training for students. Special project grants as the prime method of institutional support, however, would probably be less desirable to nursing schools than capitation because the certainty of receiving federal funds would be less than that allocated on a formula basis. Schools would, in effect, be in competition with each other for federal dollars. If a more positive school response resulted, this competition might be desirable.

Continuation of institutional assistance and traineeships for advanced nursing programs at current policy levels would ensure continued growth of these programs and qualified applicants. Moreover, in response to federal bonuses for annual graduates, existing nurse-practitioner programs could be expected to enlarge class sizes. A further condition for receiving federal aid could be that these programs develop mechanisms to

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15/ If funding were maintained at fiscal year 1979 policy levels in fiscal year 1980, $117 million in budget authority would be required.

place graduates in shortage areas. Although it would strengthen movement of RNs into areas with few nurses, there is the possibility that this requirement if added to other quid pro quos might reduce school participation.

Finally, continuation and expansion of NTA scholarships would assure access to nursing opportunities for lower-income students disadvantaged by the elimination of NTA loans and restrictions on other federal student aid programs.

TABLE 11. FISCAL YEAR 1979 BUDGET AUTHORITY FOR ALTERNATIVE FEDERAL NURSING EDUCATION AND TRAINING STRATEGIES a/: IN MILLIONS OF DOLLARS

	Current Policy	Administration's Proposal	Modified Current Policy
Institutional Assistance			
Construction	0 b/	0	1.0 - Only for interest subsidies and loan guarantees
Financial Distress	0	0	0
Capitation	32.4	0	0
Special Projects	15.9	7.5 - New funds are only for projects which improve the geographic distribution of or minority representation among RNs	50.0 - Eligible projects limited to those that improve the distribution of RNs by specialty or geographic area or focus on minority recruitment and retention
Nurse Practitioners	13.8	13.0	14.0
Advanced Nursing Training	12.8	0	16.0 - Includes a bonus of $1,500 for each additional graduate over a base number of annual graduates from a master's or doctoral or nurse practitioner program
Nursing Research	5.3	0	0
Student Assistance			
Loan Repayment	25.4	0	2.0 - Only for repayment of loans for nurses who serve in shortage areas
Scholarships	9.5	0	14.0 - Only for exceptionally needy students
Traineeships	13.8	0	14.0
Fellowships	1.1	0	0
Total	129.9	20.5	111.0

a/ Fiscal year 1979 current policy estimates are dollars needed to maintain current levels of service, calculated using fiscal year 1978 appropriations times 1.06 inflation factor. Current policy estimates for capitation were figured on a per student basis.

b/ In this instance, current policy for construction grants is estimated to be $0 because no awards have been made for this purpose since fiscal year 1975, except for one award to a consortium of nursing schools.

APPENDIX

APPENDIX. RELIABILITY OF ESTIMATES FROM THE VECTOR RESEARCH, INC., AND PUGH-ROBERTS ASSOCIATES, INC., MODELS

This appendix contains a summary assessment of the models developed by Vector Research, Inc., and Pugh-Roberts Associates, Inc., that estimate the future demand for and/or supply of RNs.

The purpose of the Vector Research model is to assess the impact of anticipated changes in the health care system on the demand for nurses. Hence, it estimates how many nurses must be employed to maintain trends in the amount of nursing care provided to the population in the absence of any supply constraints. Beginning with a base year of 1972, projections of demand for registered and practical nurses through 1985, with various assumptions about nursing and the health care system, were made using linear regression techniques. Estimates for RN employment were made for 1975 and projected to 1985 by using Bureau of Census projections of the future size and characteristics of the population, estimating of amount and type of service utilized by the projected population, and translating those service demands into employment of nurses. The parameters for the model were developed using historical data, published and unpublished.

According to the authors, their estimates of demand for RNs in 1985 are probably subject to at least a 10 percent variation. This stems from the fact that most of the health service utilization data and nursing employment data on which the estimates are based are projections themselves, based on sample surveys subject to some degree of sampling variability or standard error. Additionally, the estimates of the impact of national health insurance on the demand for nurses could potentially involve greater error since published estimates of the consumer response to changes in out-of-pocket expenditures brought about by national health insurance tend to vary.

The Pugh-Roberts model is concerned with changes taking place and likely to take place in nursing and in health care generally by the year 1990. It focuses on the impact these changes will have on the supply, demand, and distribution of nursing personnel and services. The model produces simulations,

or a series of calculations describing how a system of related factors works over time. It is composed of four interrelated submodels: the size and characteristics of the population; consumer demand for health services translated into employer demand for RNs; factors characterizing nursing employment; and factors characterizing nursing education. 1/ Thus, it differs from the VRI model in that changes taking place in one submodel feed back into the model to interact with changes taking place in other submodels.

Data characterizing a submodel at any point in time were obtained from reliable, generally published sources. A national task force was responsible for the data describing causal relationships between changes taking place in nursing employment and education over time. Initial simulations with the model were made for the 1962 to 1976 period to verify the model's behavior with historical data. Then, using 1972 as the base year, a number of simulations for the 1972 to 1990 period were run, using the model with various assumptions about nursing and the health care system.

In general, the results from the Pugh-Roberts model can be viewed with less confidence than those from Vector Research. Subject to the same errors as the VRI estimates, the Pugh-Roberts estimates probably contain greater error because the model itself is more complex and uses more estimated data. Additionally, the Pugh-Roberts estimates may overstate the future demand for RNs and understate the available supply. Because many of the model's parameters were estimated by a national task force comprised mostly of RNs, the model could contain an implicit bias toward RNs. This could account for Pugh-Roberts estimates of employed RNs from 1972 to 1985 that are greater than those developed by VRI. Second, the model may overstate the effect of employer demand for RNs on enrollment of students in nursing schools. There is sometimes a long lag before demand for individuals in particular occupations influences the occupations they select. This may not be sufficiently accounted for in the model. Data that became available after simulations were produced show that

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1/ The first two submodels of the Pugh-Roberts models are essentially the same as the VRI model.

supply estimates for all types of registered nurses and practical nurses are probably understated--at least in the first part (1972 to 1980) of the simulations.

Both models, however, produce similar estimates of the incremental impact of selected health system changes on demand for registered and practical nurses.

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